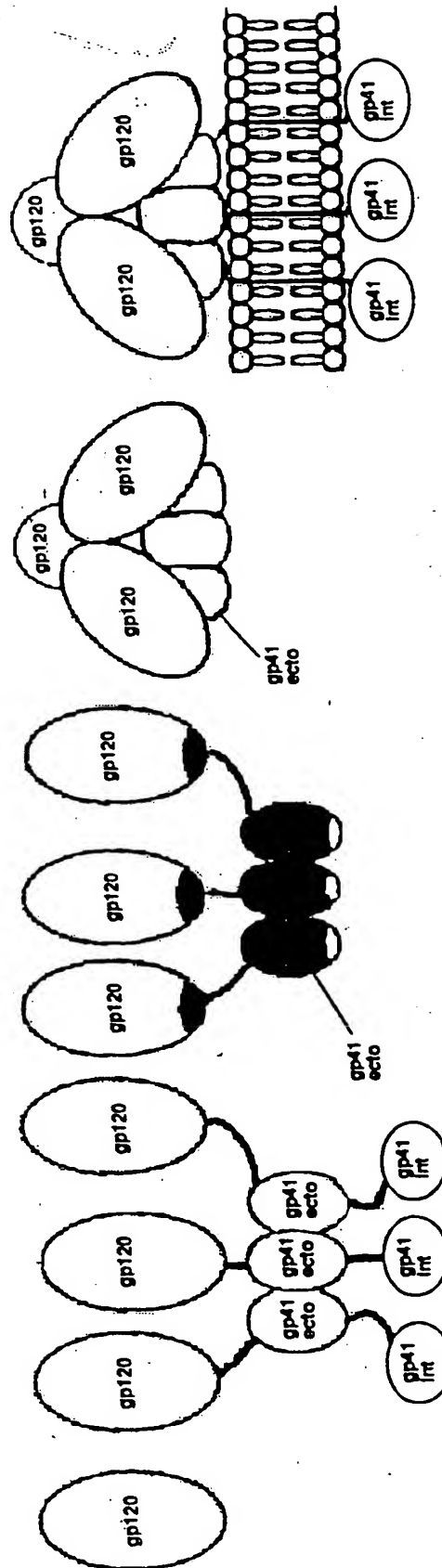
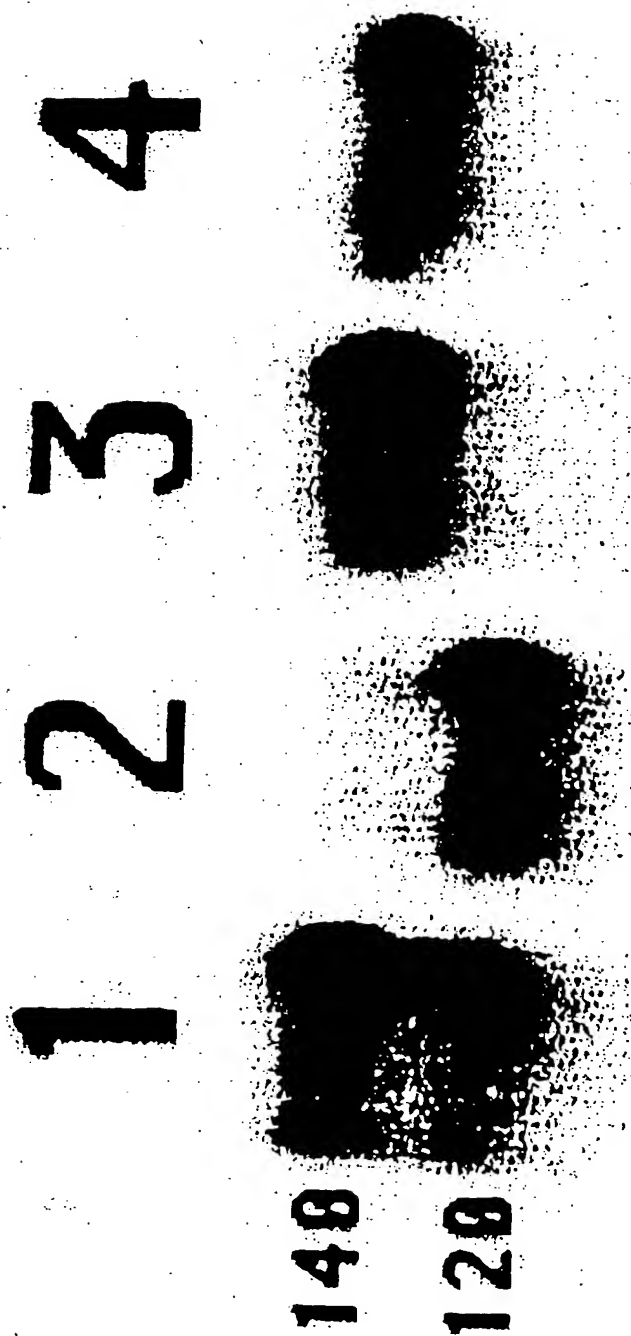


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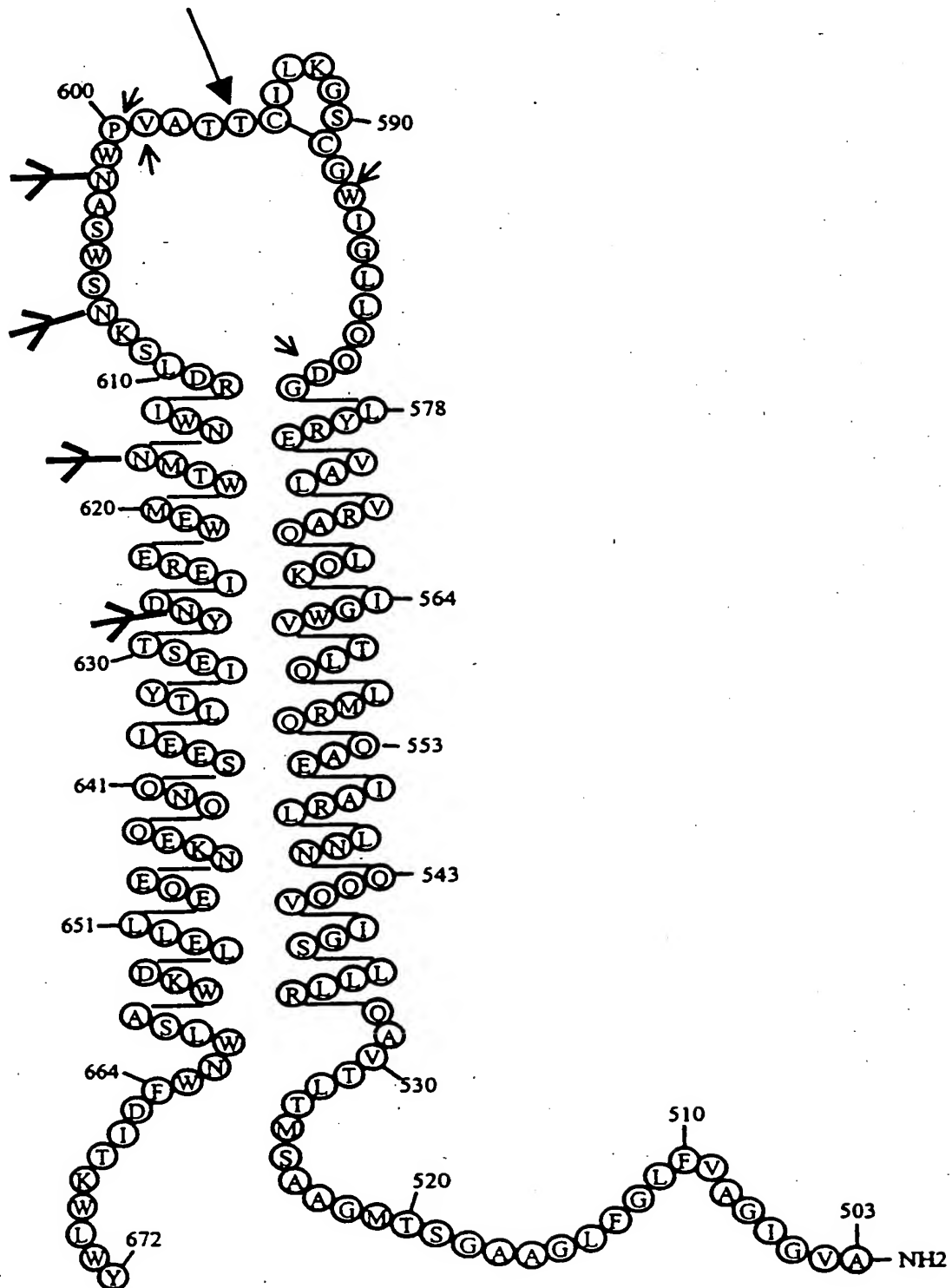
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FIGURE 2



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FIGURE 3B



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FIGURE 5

gp41

| | D580C | W587C | T596C | V599C | P600C | W601C |
|------|-------|-------|-------|-------|-------|-------|
| V35C | 0.45 | 0.40 | 0.35 | 0.30 | 0.40 | 0.30 |
| Y39C | 0.35 | 0.30 | 0.60 | 0.45 | 0.45 | N.D. |
| W44C | 0.45 | 0.45 | 0.65 | 0.50 | 0.65 | 0.45 |

gp120

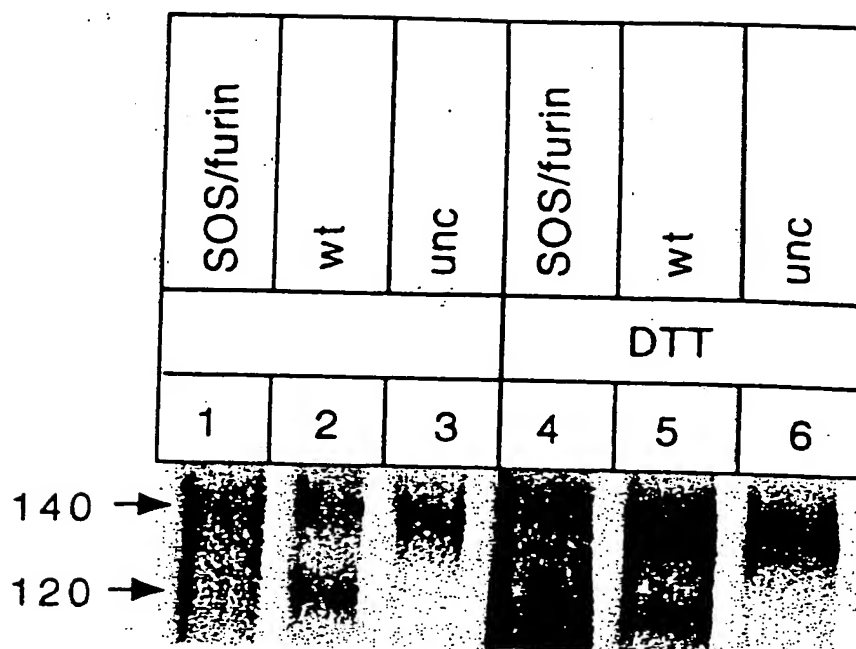
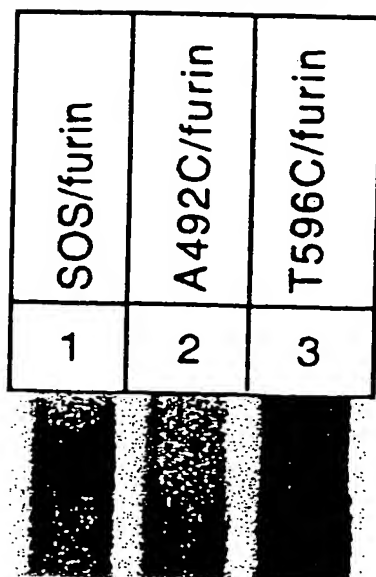
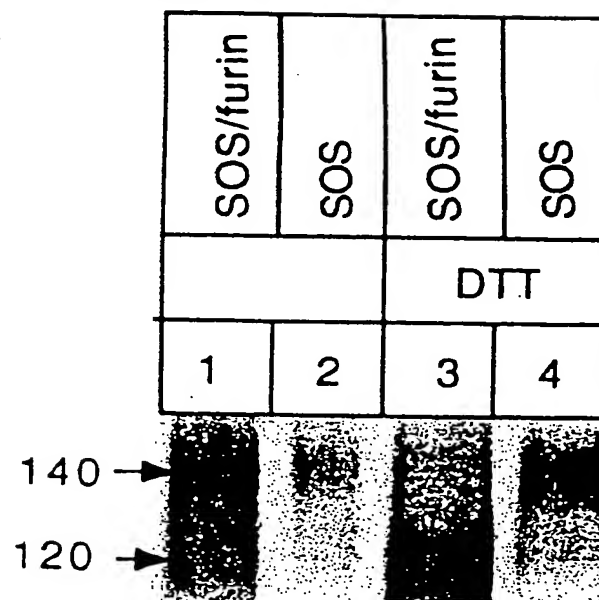
C1

| | | | | | | |
|-------|------|------|------|------|------|------|
| P484C | 0.35 | 0.30 | 0.45 | 0 | 0 | 0 |
| G486C | 0 | 0 | 0.25 | 0.20 | 0.30 | 0 |
| A488C | 0 | 0 | 0.05 | 0 | 0 | 0 |
| P489C | 0 | 0.10 | 0.30 | 0.15 | 0.05 | 0 |
| T490C | 0 | 0.15 | 0.55 | 0.25 | 0.25 | 0.10 |
| A492C | 0.05 | 0 | 0.75 | 0.50 | 0.10 | 0.25 |

gp120

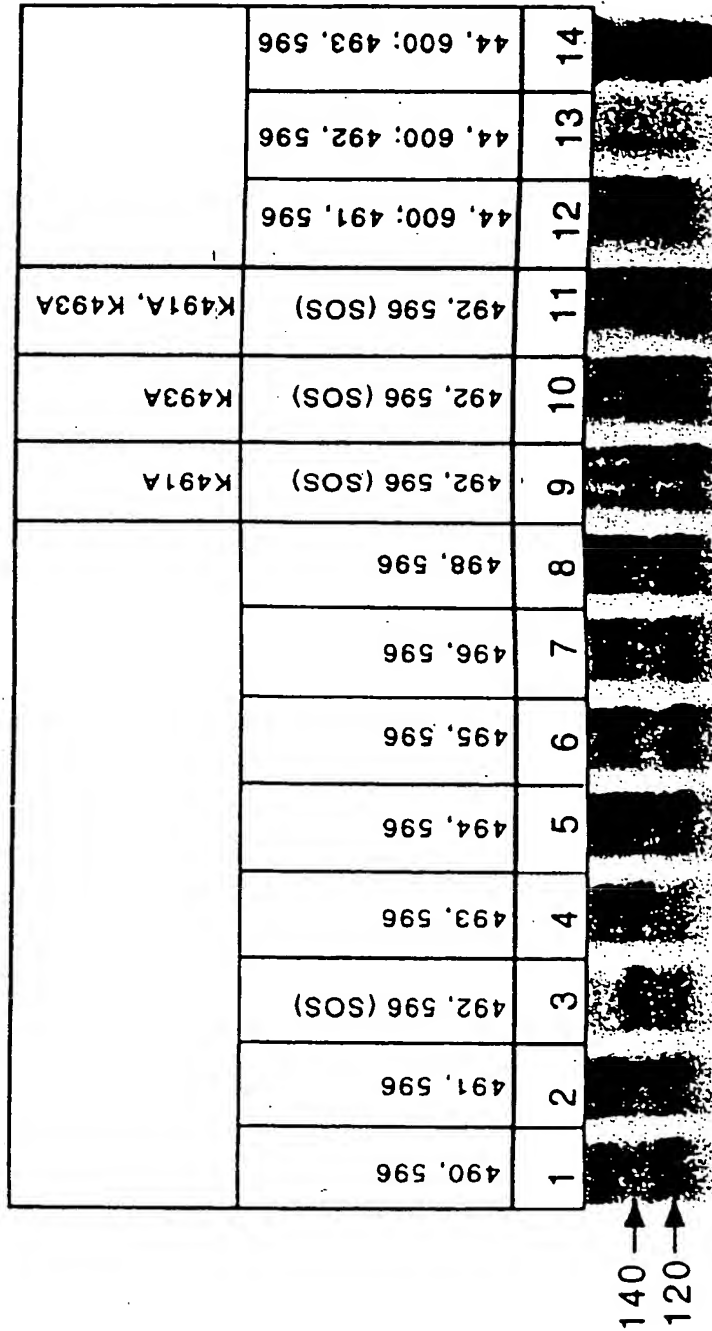
C5

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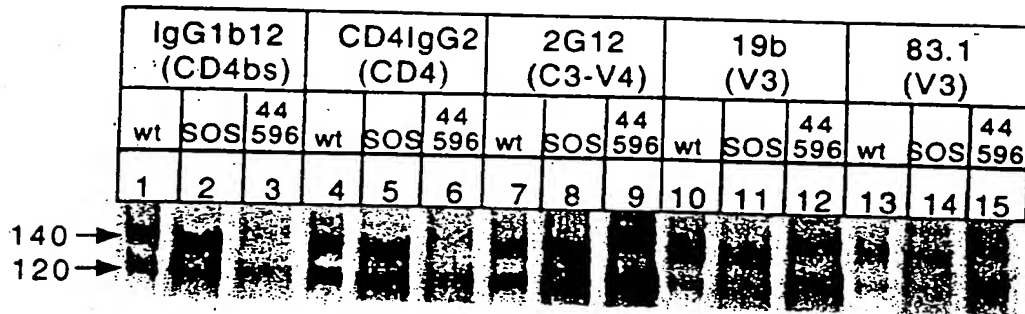
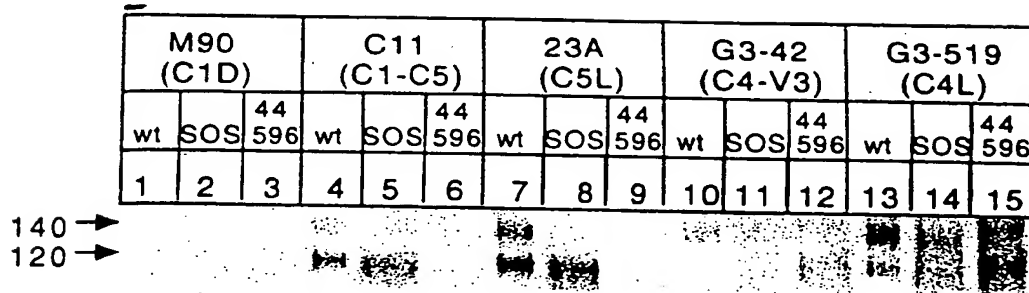
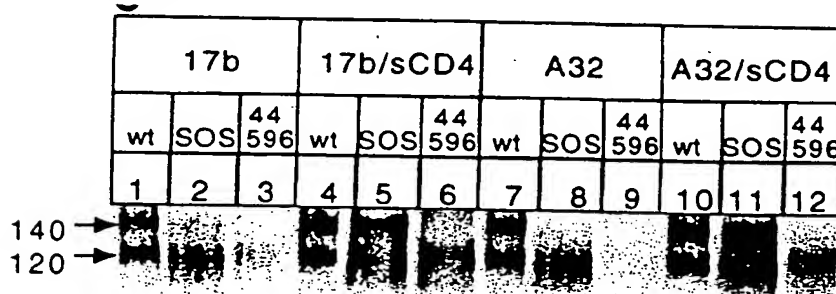
FIGURE 6A**FIGURE 6B****FIGURE 6C**

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FIGURE 7



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FIGURE 8A**FIGURE 8B****FIGURE 8C**

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FIGURE 8D

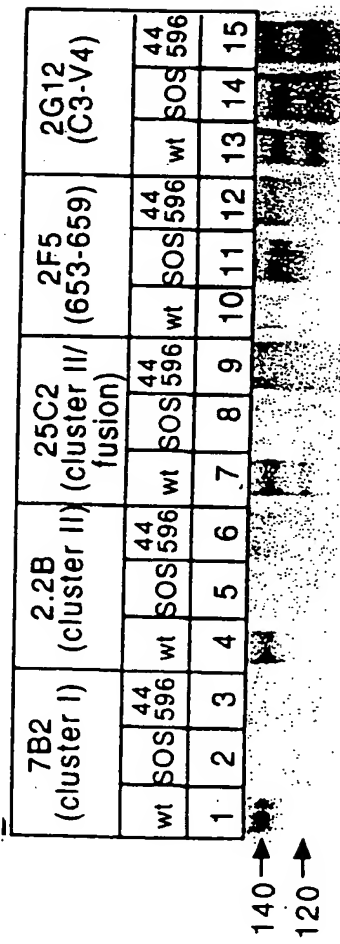
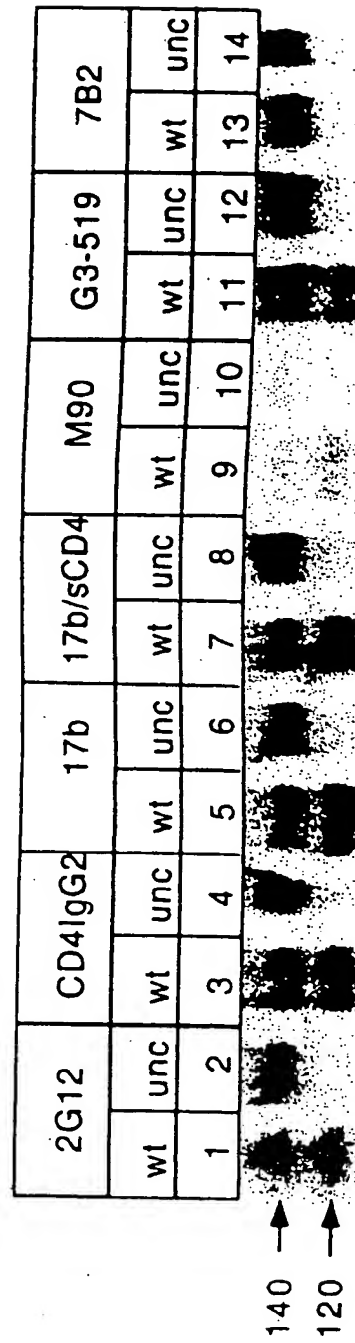
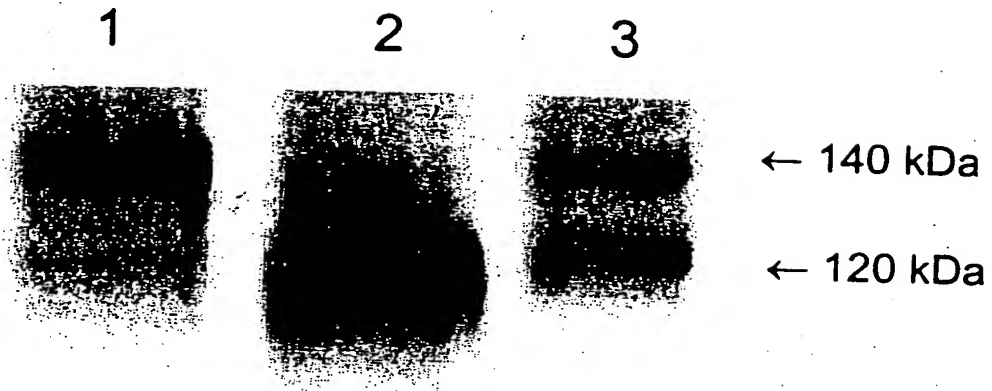
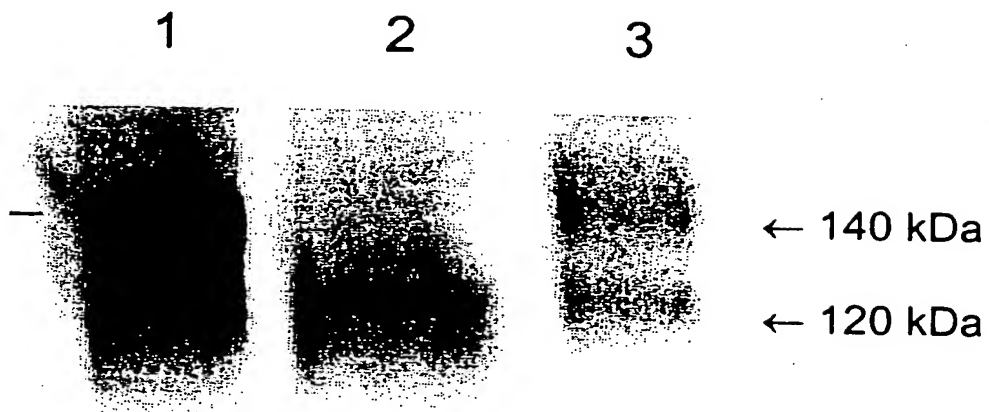


FIGURE 8E

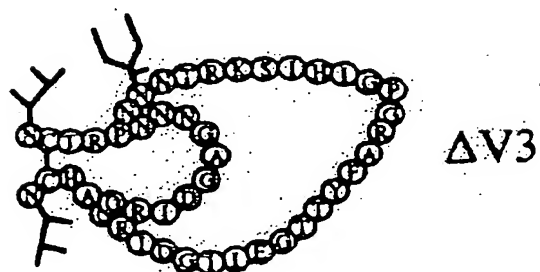
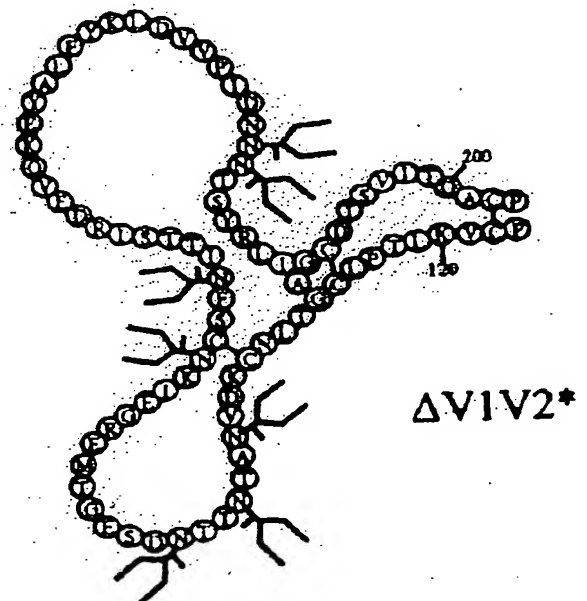
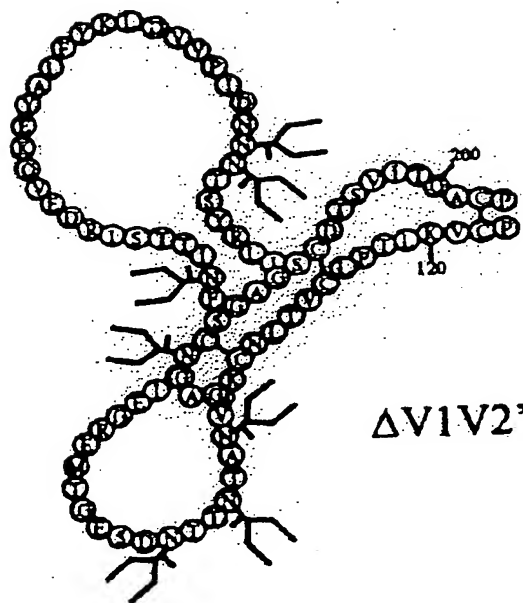
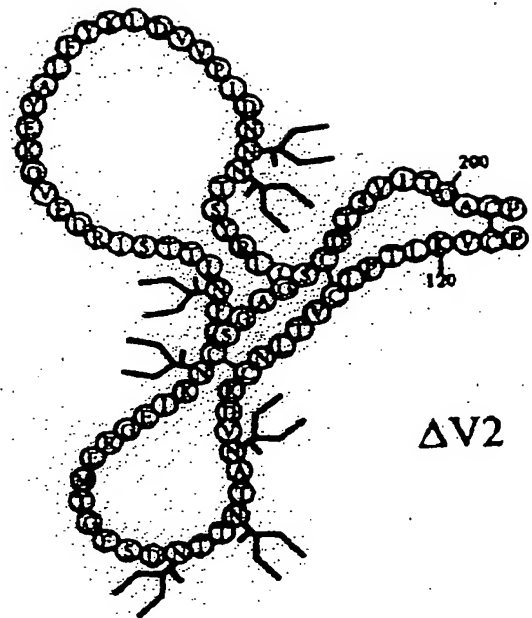
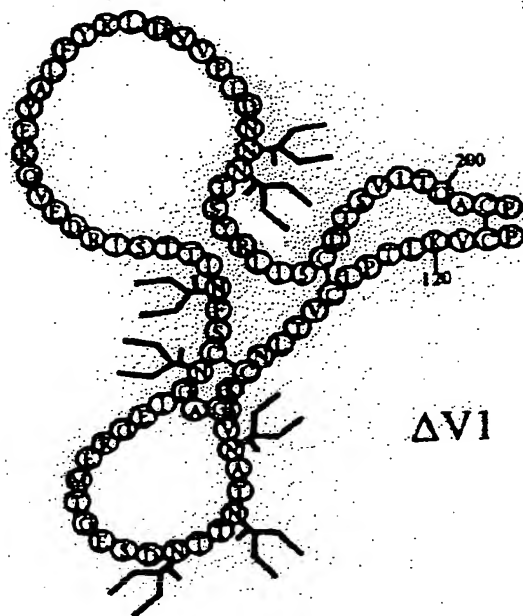


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FIGURE 9A**FIGURE 9B**

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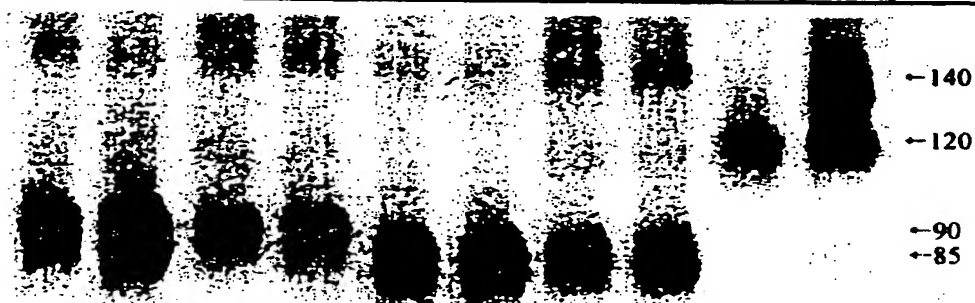
FIGURE 10



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FIGURE 11A

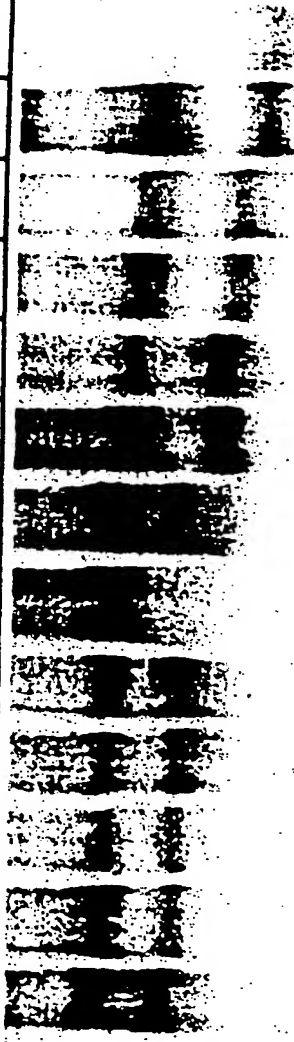
| wt ΔV1V2*V3 | | CC ΔV1V2*V3 | | wt ΔV1V2*V3 N357Q N398Q | | CC ΔV1V2*V3 N357Q N398Q | | wt | | envelope protein |
|----------------|-----|----------------|-----|----------------------------------|-----|----------------------------------|-----|-----|-----|---------------------|
| 2G12 | F91 | 2G12 | F91 | 2G12 | F91 | 2G12 | F91 | F91 | F91 | antibody |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | lane |



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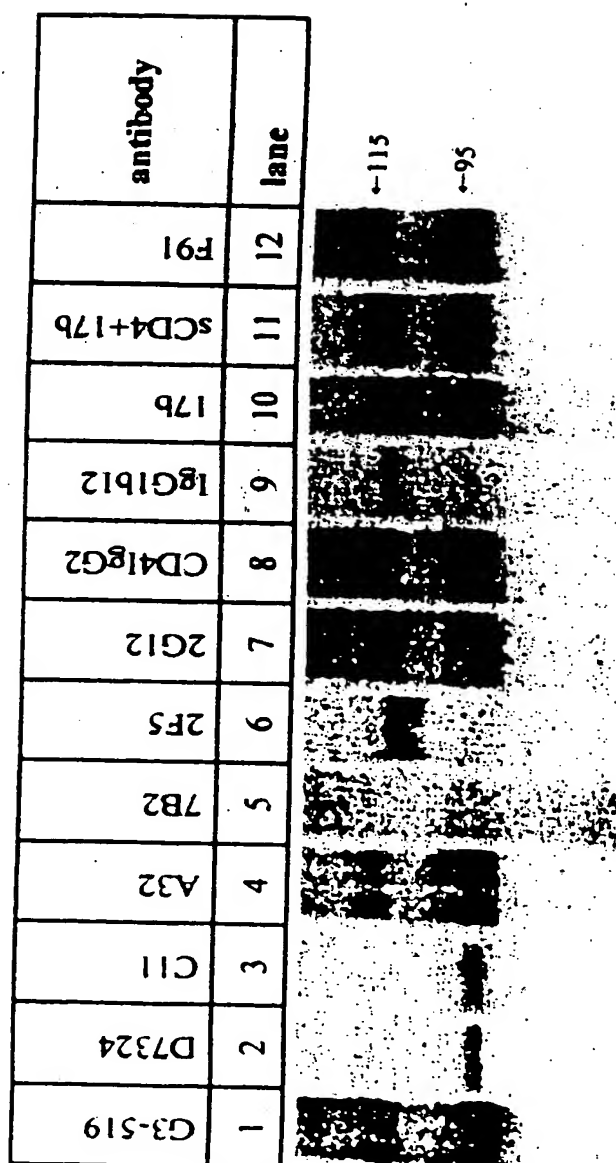
FIGURE 11B

| wt | $\Delta V1$ | | $\Delta V2$ | | $\Delta V3$ | | $\Delta V1V2'$ | | $\Delta V1V2^*$ | | $\Delta V1V2^*V3$ | | protein |
|----|-------------|----|-------------|----|-------------|----|----------------|----|-----------------|----|-------------------|----|-----------|
| | | CC | | CC | | CC | | CC | | CC | | CC | cysteines |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | lane |



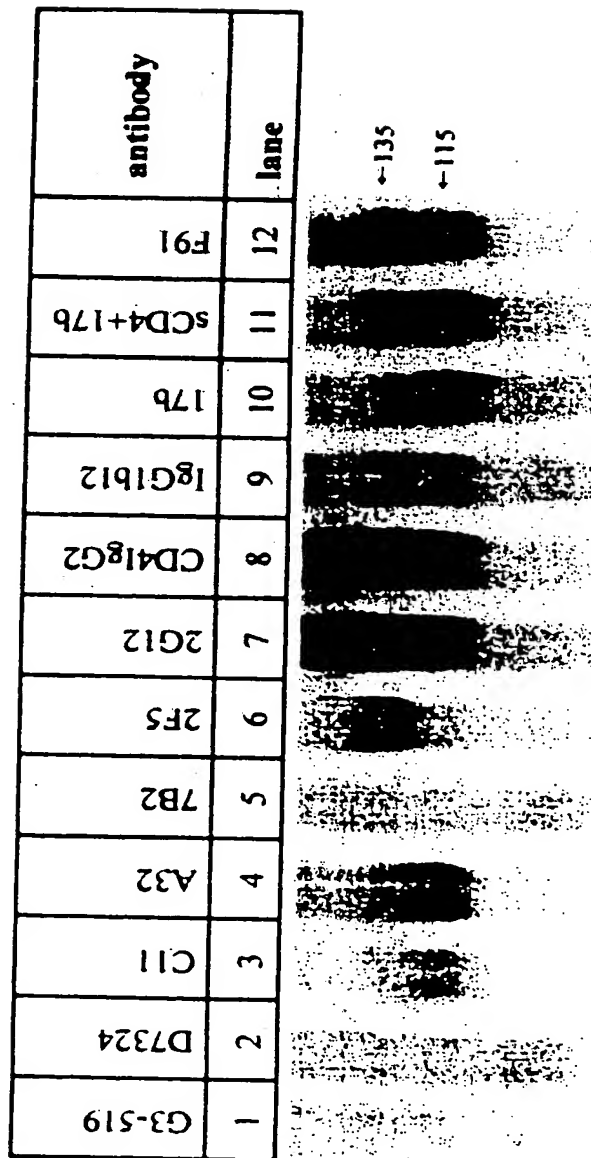
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FIGURE 12A



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FIGURE 12B



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FIGURE 13AHIV-1_{JR-FL} SOS gp140

(a)

1 GTAGAAAAGTTGTGGGTCACAGTCTATTATGGGGTACCTGTGTGGAAAGA
51 AGCAACCACCACTCTATTTTGTGCATCAGATGCTAAAGCATATGATACAG
101 AGGTACATAATGTTTGGGCCACACATGCCTGTGTACCCACAGACCCCAAC
151 CCACAAGAAGTAGTATTGGAAAATGTAACAGAACATTTTAAACATGTGGAA
201 AAATAACATGGTAGAACAGATGCAGGAGGATATAATCAGTTTATGGGATC
251 AAAGCCTAAAGCCATGTGTAAAATTAACCCCACTCTGTGTTACTTTAAAT
301 TGCAAGGATGTGAATGCTACTAATAACCACTAATGATAGCGAGGGAAACGAT
351 GGAGAGAGGAGAAATAAAAACTGCTCTTTCAATATCACCACAAGCATAA
401 GAGATGAGGTGCAGAAAGAATATGCTCTTTTTTATAAACTTGATGTAGTA
451 CCAATAGATAATAATAATACCAGCTATAGGTTGATAAGTTGTGACACCTC
501 AGTCATTACACAGGCCTGTCCAAAGATATCCTTTGAGCCAATTCCCATAC
551 ATTATTGTGCCCCGGCTGGTTTTTGCGATTCTAAAGTGTAATGATAAGACG
601 TTCAATGGAAAAGGACCATGTAAAAATGTCAGCACAGTACAATGTACACA
651 TGGAATTAGGCCAGTAGTATCAACTCAACTGCTGCTAAATGGCAGTCTAG
701 CAGAAGAAGAGGTAGTAATTAGATCTGACAATTTACGAACAATGCTAAA
751 ACCATAATAGTACAGCTGAAAGAATCTGTAGAAATTAATTGTACAAGACC
801 CAACAACAATACAAGAAAAAGTATACATATAGGACCAGGGAGAGCATTTT
851 ATACTACAGGAGAAATAATAGGAGATATAAGACAAGCACATTGTAACATT
901 AGTAGAGCAAAATGGAATGACACTTTAAAACAGATAGTTATAAAATTAAG
951 AGAACAAATTTGAGAATAAAACAATAGTCTTTAATCACTCCTCAGGAGGGG
1001 ACCCAGAAATTGTAATGCACAGTTTTTAATTGTGAAGGAGAATTTTTCTAC
1051 TGTAATTCAACACAACCTGTTTAATAGTACTTGGAATAATAATACTGAAGG
1101 GTCAAATAACACTGAAGGAAATACTATCACACTCCCATGCAGAATAAAAC
1151 AAATTATAAACATGTGGCAGGAAGTAGGAAAAGCAATGTATGCCCCCTCCC
1201 ATCAGAGGACAAATTAGATGTTTCATCAAATATTACAGGGCTGCTATTAAC
1251 AAGAGATGGTGGTATTAATGAGAATGGGACCGAGATCTTCAGACCTGGAG
1301 GAGGAGATATGAGGGACAATTGGAGAAGTGAATTCTATAAATATAAAGTA
1351 GTAAAAATTGAACCATTAGGAGTAGCACCCACCAAGTGCAAGAGAAGAGT
1401 GGTGCAAAGAGAAAAAAGAGCAGTGGGAATAGGAGCTGTGTTCCCTTGGGT
1451 TCTTGGGAGCAGCAGGAAGCACTATGGGCGCAGCGTCAATGACACTGACG
1501 GTACAGGCCAGACTATTATTGTCTGGTATAGTGCAACAGCAGAACAATTT
1551 GCTGAGGGCTATTGAGGCGCAACAGCGTATGTTGCAACTCACAGTCTGGG
1601 GCATCAAGCAGCTCCAGGCAAGAGTCCTGGCTGTGGAAAGATACCTAGGG
1651 GATCAACAGCTCCTGGGGATTTGGGGTTGCTCTGGAAAACCTCATTTGCTG
1701 CACTGCTGTGCCTTGGAATGCTAGTTGGAGTAATAAATCTCTAGATAGGA
1751 TTTGGAATAACATGACCTGGATGGAGTGGGAAAGAGAAATTGACAATTAC
1801 ACAAGCGAAATATACACACTAATTGAAGAATCGCAGAACCAACAAGAAAA
1851 GAATGAACAAGAATTATTGGAATTAGATAAATGGGCAAGTTTGTGGAATT
1901 GGTTTGACATAACAACTGGCTGTGGTAT

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FIGURE 13B

| | | | | | |
|-----|-------------------------|------------|-------------------------|-------------|------------|
| 30 | VEKLWTVYY | GVPVKEATT | TLFCASDAKA | YDTEVHNVWA | THACVPTDPN |
| 80 | PQEVVLENT | EHFNMWKNM | VEQMEDIIS | LWDQSLKPCV | KLTPLCVTLN |
| 130 | CKDVNATNT | NDSEGTMERG | EIKNCSEFNT | TSIRDEVQKE | YALFYKLDVV |
| 180 | PIDNNNTSYR | LISCDTSVIT | QACPKISFEP | IPIHYCAPAG | FAILKCNDKT |
| 230 | FNGKGPCKNV | STVQCTHGIR | PVVSTQLLLN | GSLAEDEVVI | RSDNFTNNAK |
| 280 | TIIVQLKESV | EINCTRPNNN | TRKSIHIGPG | RAFYTTEGII | GDIRQAHCNI |
| 330 | SRAKWN D TLK | QIVIKLREQF | ENKTIVFNHS | SGGDPEIVMH | SFNCEGEFFY |
| 380 | CNSTQLFNST | WNNNTEGSNN | TEGNTITLPC | RIKQIINMWQ | EVGKAMYAPP |
| 430 | IRGQIRCSSN | ITGLLLTRDG | GINENGTEIF | RPGGDMRDN | WRSEFYKYKV |
| 480 | VKIEPLGVAP | TKCKRRVVQR | EKRAVGIGAV | FLGFLGAAGS | TMGAASMTLT |
| 530 | VQARLLLSGI | VQQQNNLLRA | IEAQQRMLQL | TVWGIKQLQA | RVLAVERYLG |
| 580 | DQQLLGIWGC | SGKLICCTAV | PWNASWSNKS | LDRIWNNMTW | MEWEREIDNY |
| 630 | TSEIYTLIEE | SQNQQEKNEQ | ELLELDK W AS | LWNWFEDITNW | LWY |

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FIGURE 14AHIV-1_{JR-FL} Δ V1V2* SOS gp140

(a)

```
1   GTAGAAAAGTTGTGGGTCACAGTCTATTATGGGGTACCTGTGTGGAAAGA
51  AGCAACCACCACTCTATTTTGTGCATCAGATGCTAAAGCATATGATACAG
101 AGGTACATAATGTTTGGGCCACACATGCCTGTGTACCCACAGACCCCAAC
151 CCACAAGAAGTAGTATTGGAAAATGTAAACAGAACATTTTAACATGTGGAA
201 AAATAACATGGTAGAACAGATGCAGGAGGATATAATCAGTTTATGGGATC
251 AAAGCCTAAAGCCATGTGTAAAATTAACCCCACTCTGTGGTGCAGGATGT
301 GACACCTCAGTCATTACACAGGCCTGTCCAAAGATATCCTTTGAGCCAAT
351 TCCCATACATTATTGTGCCCCGGCTGGTTTTGCGATTCTAAAGTGTAATG
401 ATAAGACGTTCAATGGAAAAGGACCATGTAAAAATGTCAGCACAGTACAA
451 TGTACACATGGAATTAGGCCAGTAGTATCAACTCAACTGCTGCTAAATGG
501 CAGTCTAGCAGAAGAAGAGGTAGTAATTAGATCTGACAATTTACGAACA
551 ATGCTAAAACCATAATAGTACAGCTGAAAGAATCTGTAGAAATTAATTGT
601 ACAAGACCCAACAACAATACAAGAAAAAGTATACATATAGGACCAGGGAG
651 AGCATTTTATACTACAGGAGAAATAATAGGAGATATAAGACAAGCACATT
701 GTAACATTAGTAGAGCAAAATGGAATGACACTTTAAAACAGATAGTTATA
751 AAATTAAGAGAACAATTTGAGAATAAAACAATAGTCTTTAATCACTCCTC
801 AGGAGGGGACCCAGAAATTGTAATGCACAGTTTTAATTGTGGAGGAGAAT
851 TTTTCTACTGTAATTCAACACAACCTGTTTAATAGTACTTGAATAATAAT
901 ACTGAAGGGTCAAATAACACTGAAGGAAATACTATCACACTCCCATGCAG
951 AATAAAACAAATTATAAACATGTGGCAGGAAGTAGGAAAAGCAATGTATG
1001 CCCCTCCCATCAGAGGACAAATTAGATGTTTCATCAAATATTACAGGGCTG
1051 CTATTAACAAGAGATGGTGGTATTAATGAGAATGGGACCGAGATCTTCAG
1101 ACCTGGAGGAGGAGATATGAGGGACAATTGGAGAAGTGAATTATATAAAT
1151 ATAAAGTAGTAAAAATTGAACCATTAGGAGTAGCACCCACCAAGTGCAAG
1201 AGAAGAGTGGTGCAAAGAGAAAAAAGAGCAGTGGGAATAGGAGCTGTGTT
1251 CCTTGGGTTCTTGGGAGCAGCAGGAAGCACTATGGGCGCAGCGTCAATGA
1301 CACTGACGGTACAGGCCAGACTATTATTGTCTGGTATAGTGCAACAGCAG
1351 ACAAATTTGCTGAGGGCTATTGAGGCGCAACAGCGTATGTTGCAACTCAC
1401 AGTCTGGGGCATCAAGCAGCTCCAGGCAAGAGTCCTGGCTGTGGAAAGAT
1451 ACCTAGGGGATCAACAGCTCCTGGGGATTTGGGGTTGCTCTGGAAAACCTC
1501 ATTTGCTGCACTGCTGTGCCTTGGAATGCTAGTTGGAGTAATAAATCTCT
1551 GGATAGGATTTGGAATAACATGACCTGGATGGAGTGGGAAAGAGAAATTG
1601 ACAATTACACAAGCGAAATATACACCCTAATTGAAGAATCGCAGAACCAA
1651 CAAGAAAAGAATGAACAAGAATTATTGGAATTAGATAAATGGGCAAGTTT
1701 GTGGAATTGGTTTGACATAACAACTGGCTGTGGTAT
```

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FIGURE 14B

(b)

| | | | | | |
|-----|-------------|------------|------------|-------------|------------|
| 30 | VEKLWVTVYY | GVPVWKEATT | TLFCASDAKA | YDTEVHNVWA | THACVPTDPN |
| 80 | PQEVVLENT | EHFNMWKNNM | VEQMQEDIIS | LWDQSLKPCV | KLTPLCGAGC |
| 130 | DTSVITQACP | KISFEPIPIH | YCAPAGFAIL | KCNDKTFNGK | GPCKNVSTVQ |
| 180 | CTHGIRPVVS | TQLLLNGSLA | EEEVVIRSDN | FTNNAKTIIV | QLKESVEINC |
| 230 | TRPNNNTRKS | IHIGPGRIFY | TTGEIIGDIR | QAHCNISRAK | WNDTLKQIVI |
| 280 | KLREQFENKT | IVFNHSSGGD | PEIVMHSFNC | GGEFFYCNST | QLFNSTWNNN |
| 330 | TEGSNNTEGN | TITLPCRICK | IINMWQEVGK | AMYAPPPIRGQ | IRCSSNITGL |
| 380 | LLTRDGGINE | NGTEIFRPGG | GDMRDNWRSE | LYKYKVVKIE | PLGVAPTCK |
| 430 | RRVVQREKRA | VGIGAVFLGF | LGAAGSTMGA | ASMTLTVQAR | LLLSGIVQQQ |
| 480 | NNLLRAIEAQ | QRMQLTVWG | IKQLQARVLA | VERYLGDQQL | LGIWGCSGKL |
| 530 | ICCTAVPWNA | SWSNKSLDRI | WNNMTWMEWE | REIDNYTSEI | YTLIEESQNO |
| 580 | QEKNEQEELLE | LDKWASLWNW | FDITNWLWY | | |

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FIGURE 15AHIV-1_{JR-FL} ΔV3 SOS gp140

(a)

```
1   GTAGAAAAGTTGTGGGTCACAGTCTATTATGGGGTACCTGTGTGGAAAGA
51  AGCAACCACCACTCTATTTTGTGCATCAGATGCTAAAGCATATGATACAG
101 AGGTACATAATGTTTGGGCCACACATGCCTGTGTACCCACAGACCCCAAC
151 CCACAAGAAGTAGTATTGGAAAATGTAACAGAACATTTTAAACATGTGGAA
201 AAATAACATGGTAGAACAGATGCAGGAGGATATAATCAGTTTATGGGATC
251 AAAGCCTAAAGCCATGTGTAAAATTAACCCCACTCTGTGTTACTTTAAAT
301 TGCAAGGATGTGAATGCTACTAATACCACTAATGATAGCGAGGGAACGAT
351 GGAGAGAGGAGAAATAAAAACTGCTCTTTCAATATCACCACAAGCATAA
401 GAGATGAGGTGCAGAAAGAATATGCTCTTTTTTATAAACTTGATGTAGTA
451 CCNATAGATAATAATAATACCAGCTATAGGTTGATAAGTTGTGACACCTC
501 AGTCATTACACAGGCCTGTCCAAAGATATCCTTTGAGCCAATTCCCATAC
551 ATTATTGTGCCCCGGCTGGTTTTGCGATTCTAAAGTGTAATGATAAGACG
601 TTCAATGGAAAAGNCCATGTAAAAATGTCAGCACAGTNCAATGTACACA
651 TGGAATTAGGCCAGTAGTATCAACTCAACTGCTGCTAAATGGCAGTCTAG
701 CAGAAGAAGAGGTAGTAATTAGATCTGACAATTTACGAACAATGCTAAA
751 ACCATAATAGTACAGCTGAAAGAATCTGTAGAAATTAATTGTACAAGACC
801 CAACAACAATGGAGCCGGCGATATAAGACAAGCACATTGTAACATTAGTA
851 GAGCAAAATGGAATGACACTTTAAACAGATAGTTATAAAATTAAGAGAA
901 CAATTTGAGAATAAAACAATAGTCTTTAATCACTCCTCAGGAGGGGACCC
951 AGAAATTGTAATGCACAGTTTTAATTGTGGAGGAGAATTTTTCTACTGTA
1001 ATTCAACACAACCTGTTTTAATAGTACTTGGAATAATAACTGAAGGGTCA
1051 AATAACACTGAAGGAAATACTATCACACTCCCATGCAGAATAAAACAAAT
1101 TATAAACATGTGGCAGGAAGTAGGAAAAGCAATGTATGCCCTCCCATCA
1151 GAGGACAAATTAGATGTTTCATCAAATATTACAGGGCTGCTATTAACAAGA
1201 GATGGTGGTATTAATGAGAATGGGACCGAGATCTTCAGACCTGGAGGAGG
1251 AGATATGAGGGACAATTGGAGAAGTGAATTATATAAATATAAAGTAGTAA
1301 AAATTGAACCATTAGGAGTAGCACCCACCAAGTGCAAGAGAAGAGTGGTG
1351 CAAAGAGAAAAAAGAGCAGTGGGAATAGGAGCTGTGTTCCCTGGGTTCTT
1401 GGGAGCAGCAGGAAGCACTATGGGCGCAGCGTCAATGACACTGACGGTAC
1451 AGGCCAGACTATTATTGTCTGGTATAGTGCAACAGCAGAACAATTTGCTG
1501 AGGGCTATTGAGGCGCAACAGCGTATGTTGCAACTCACAGTCTGGGGCAT
1551 CAAGCAGCTCCAGGCAAGAGTCCTGGCTGTGGAAAGATACCTAGGGGATC
1601 AACAGCTCCTGGGGATTGTTGGGGTTGCTCTGGAAACTCATTTGCTGCACT
1651 GCTGTGCCTTGGAATGCTAGTTGGAGTAATAAATCTCTGGATAGGATTTG
1701 GAATAACATGACCTGGATGGAGTGGGAAAGAGAAATTGACAATTACACAA
1751 GCGAAATATACACCCTAATTGAAGAATCGCAGAACCAACAAGAAAAGAAT
1801 GAACAAGAATTATTGGAATTAGATAAATGGGCAAGTTTGTGGAATTGGTT
1851 TGACATAACAAAATGGCTGTGGTAT
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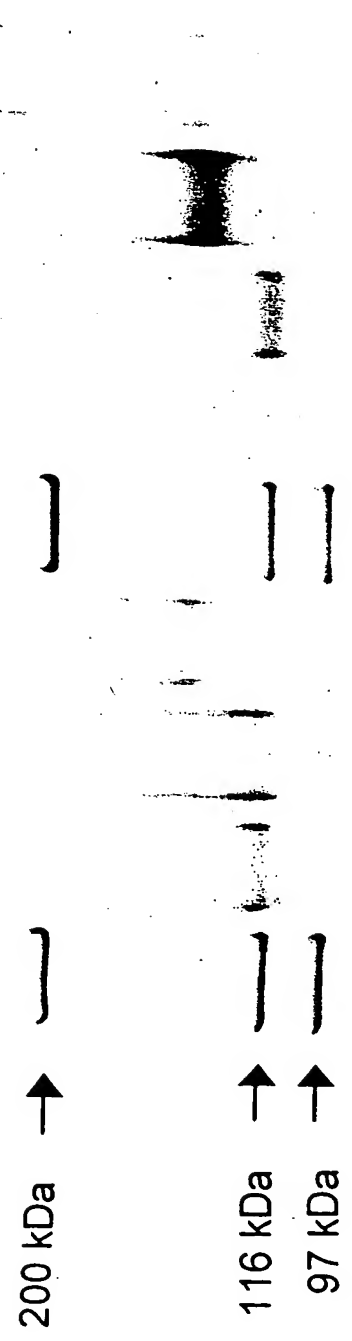
FIGURE 15B

| | | | | | |
|-----|------------|-------------|------------|------------|------------|
| 30 | VEKLWTVYY | GVPVWKEATT | TLFCASDAKA | YDTEVHNVWA | THACVPTDPN |
| 80 | PQEVVLENT | EHFNMWKNNM | VEQMEDIIS | LWDQSLKPCV | KLTPLCVTLN |
| 130 | CKDVNATNT | NDSEGTMERG | EIKNCSEFNT | TSIRDEVQKE | YALFYKLDVV |
| 180 | XIDNNNTSYR | LISCDTSVIT | QACPKISFEP | IPIHYCAPAG | FAILKCNDKT |
| 230 | FNGKXPCKNV | STXQCTHGIR | PVVSTQLLN | GSLAEDEVVI | RSDNFTNNAK |
| 280 | TIIVQLKESV | EINCTRPNNN | GAGDIRQAHC | NISRAKWNDT | LKQIVIKLRE |
| 330 | QFENKTIVEN | HSSGGDPEIV | MHSFNCGGEF | FYCNSTQLEN | STWNNNTEGS |
| 380 | NNTEGNTITL | PCRICKIINM | WQEVGKAMYA | PPIRGQIRCS | SNITGLLLTR |
| 430 | DGGINENGTE | IFRPGGGDMR | DNWRSELYKY | KVVKIEPLGV | APTKCKRRVV |
| 480 | QREKRAVGIG | AVFLGFLGAA | GSTMGAASMT | LTVQARLLLS | GIVQQQNNLL |
| 530 | RAIEAQQRM | QLTVWGIKQL | QARVLAVERY | LGDQQLLGIV | GCSGKLICCT |
| 580 | AVPWNASWSN | KSLDRIWNNM | TWMEWEREID | NYTSEIYTLI | EESQNOQEK |
| 630 | EQELLELDKW | ASLWNWFEDIT | KWLWY | | |

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FIGURE 16

| reduced | | | | non-reduced | | | | |
|-----------|-------|--------------|--------------|-------------|------|-------|--------------|--------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| MW STD | gp120 | SOS gp140 | gp140 UNC | MW STD | none | gp120 | SOS gp140 | gp140 UNC |



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FIGURE 17B

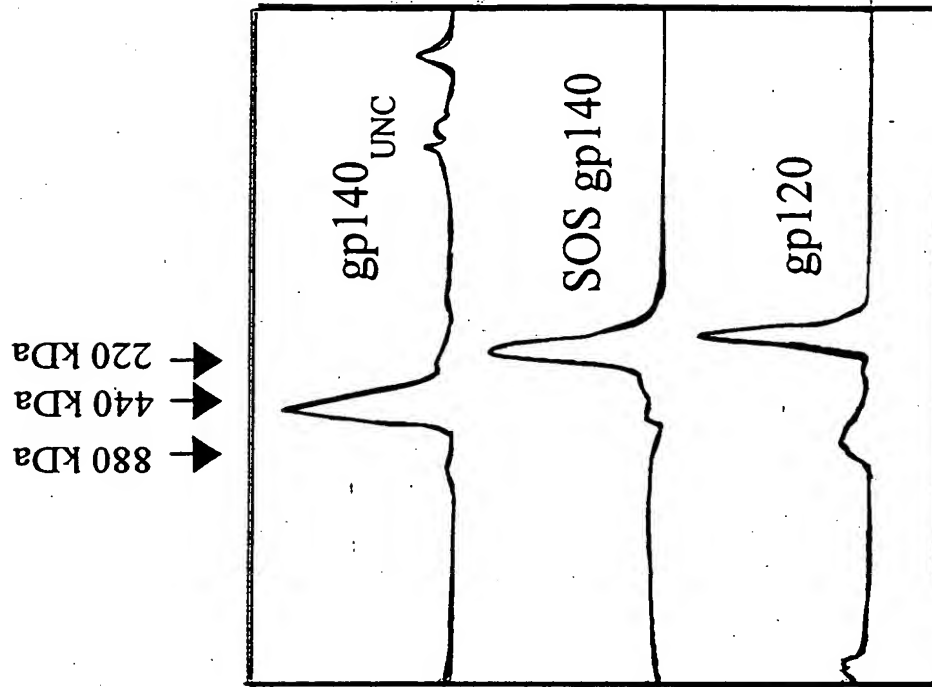
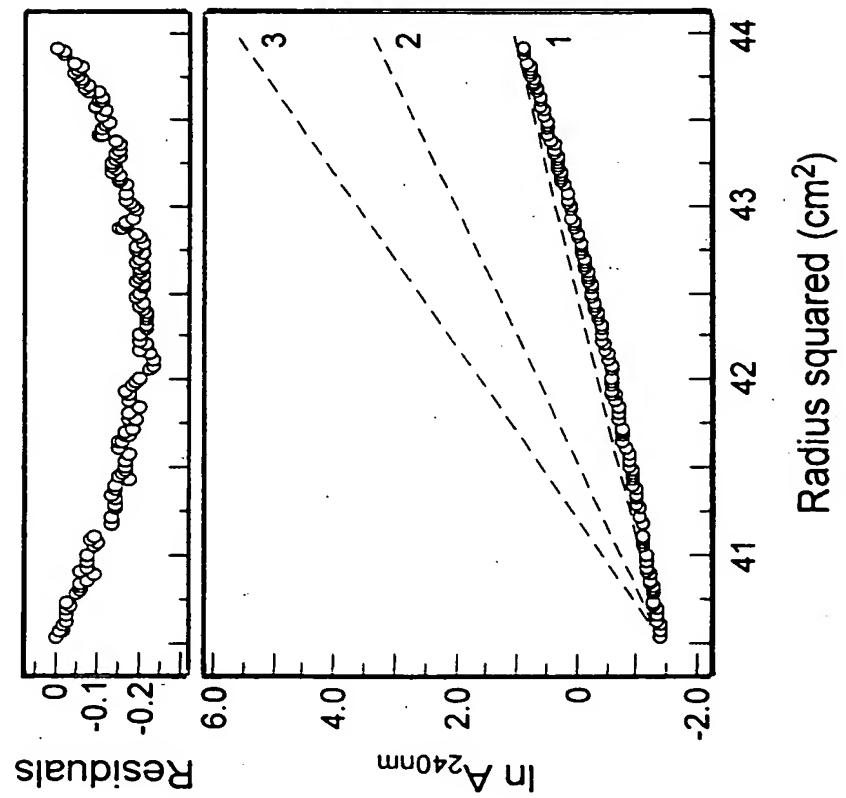
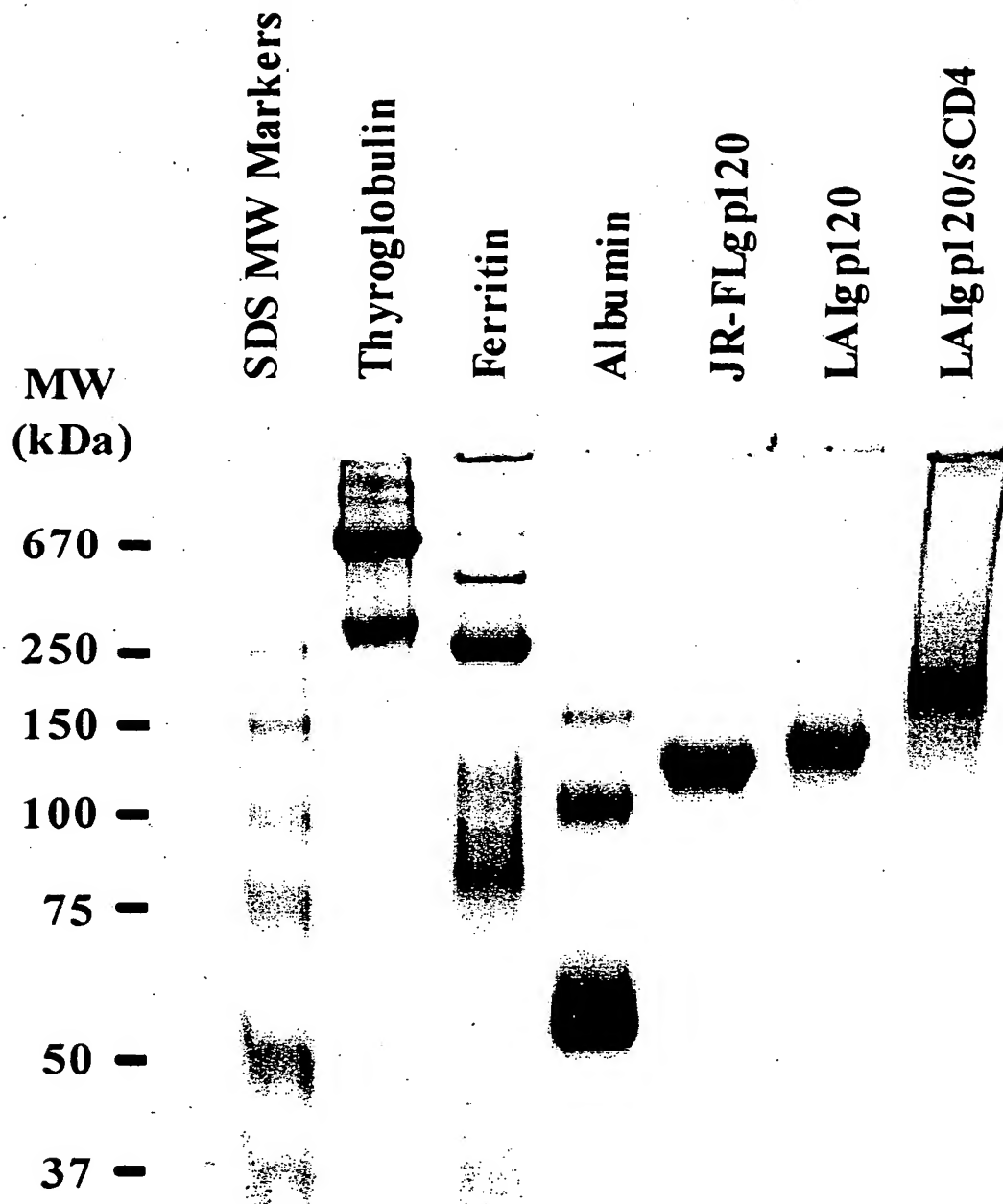


FIGURE 17A



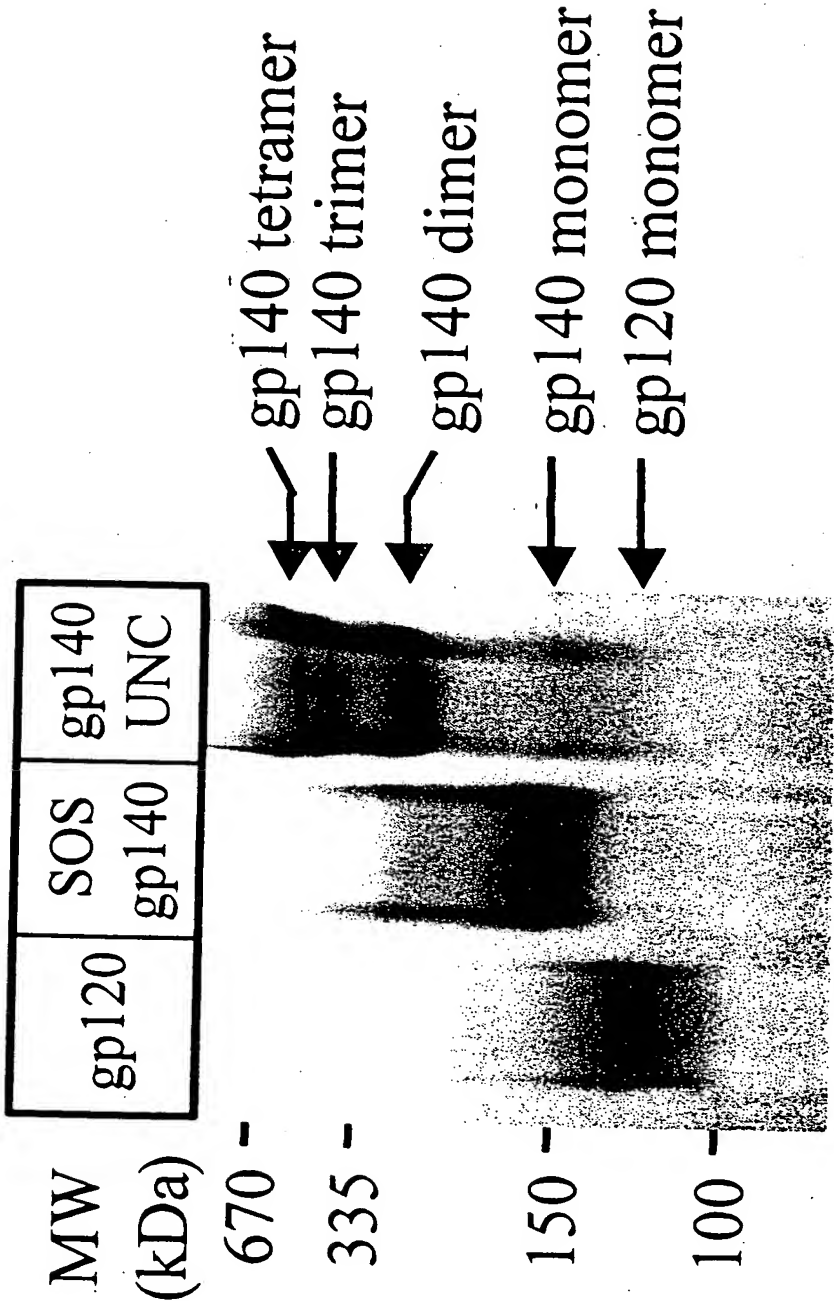
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FIGURE 17C



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FIGURE 17D



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FIGURE 18B

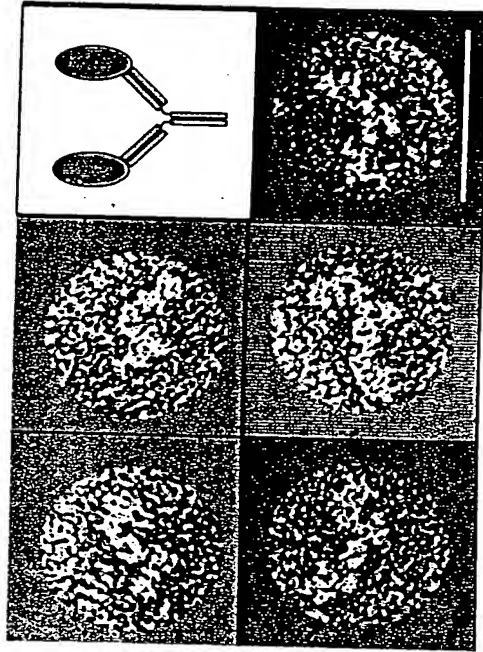
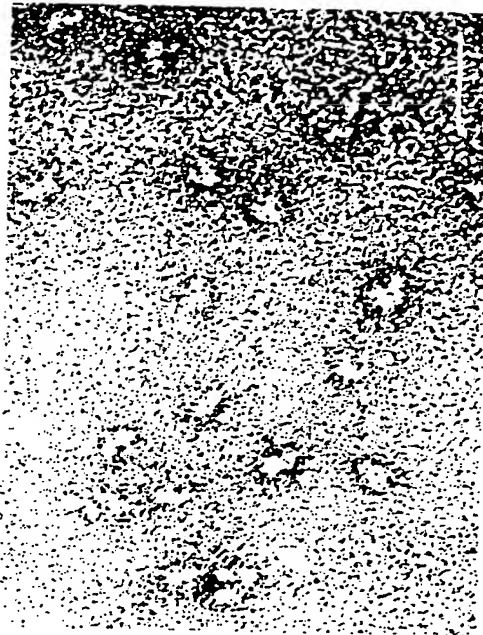


FIGURE 18A



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FIGURE 18D

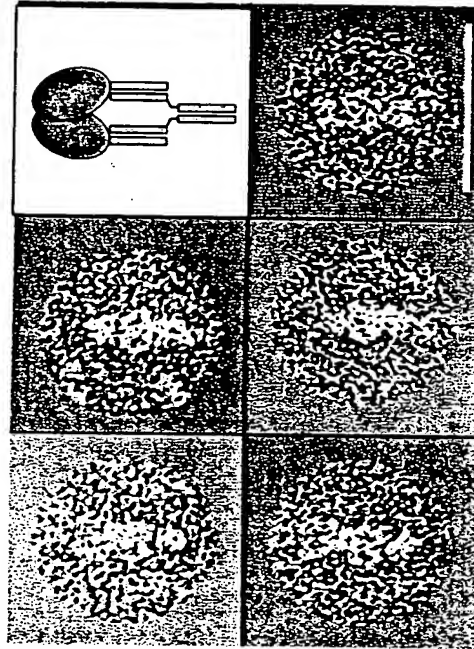
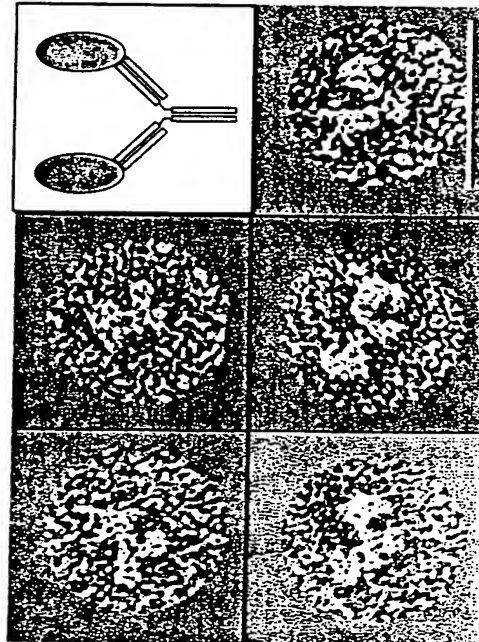


FIGURE 18C



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FIGURE 18F

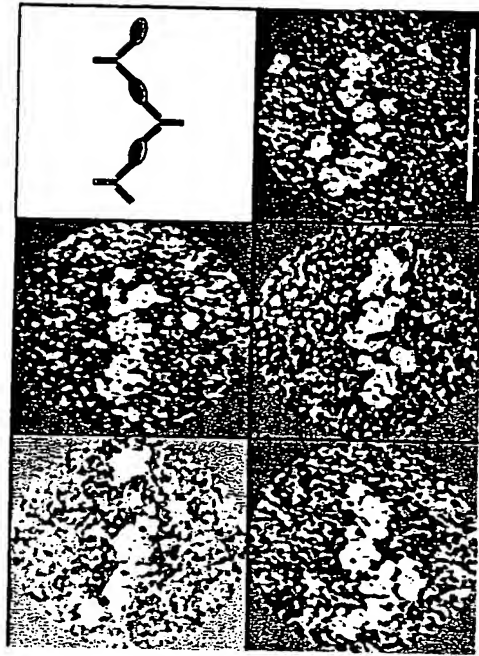
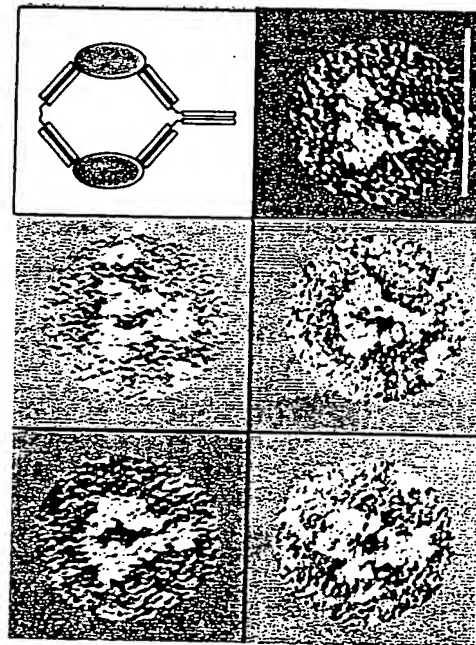


FIGURE 18E



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FIGURE 19B

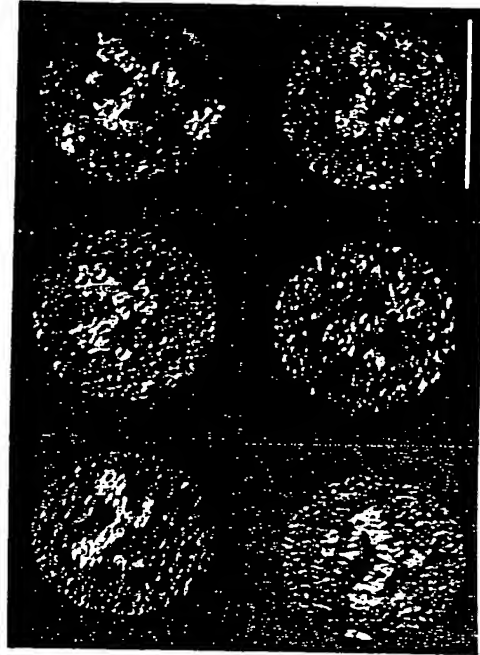
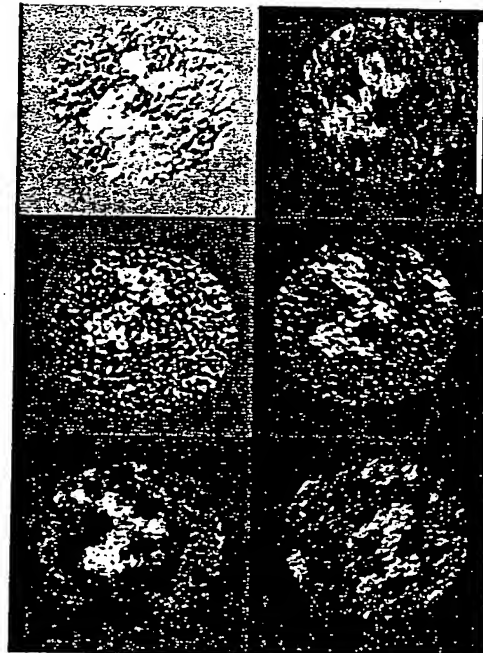


FIGURE 19A



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FIGURE 19C

FIGURE 19D

FIGURE 19E

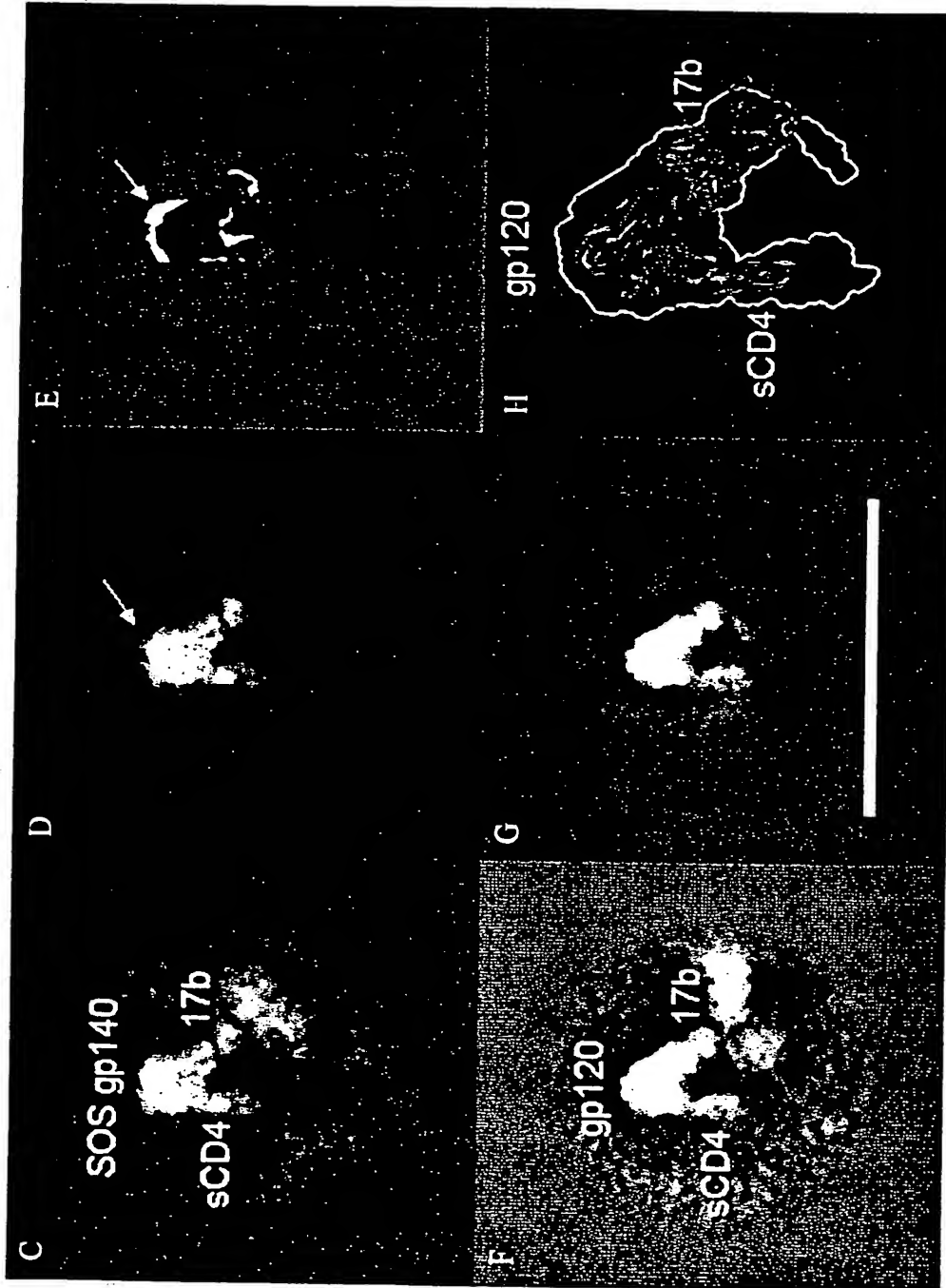
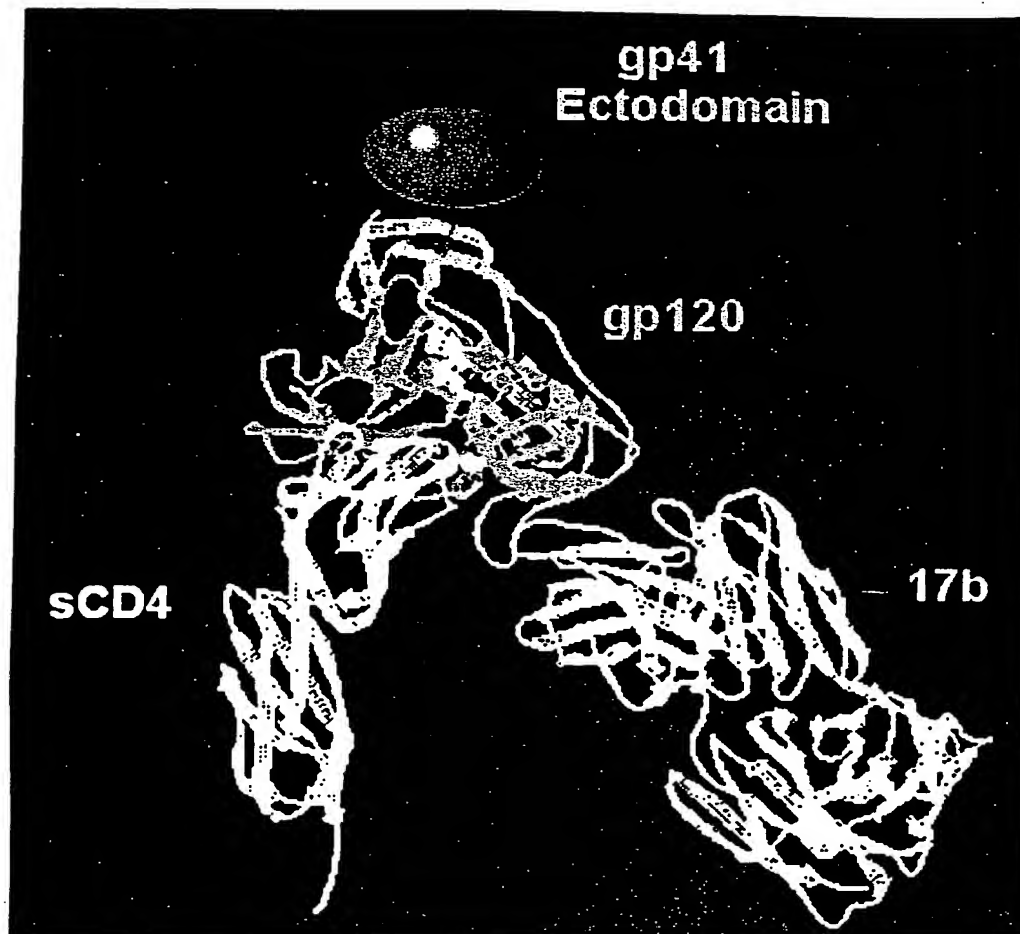


FIGURE 19H

FIGURE 19G

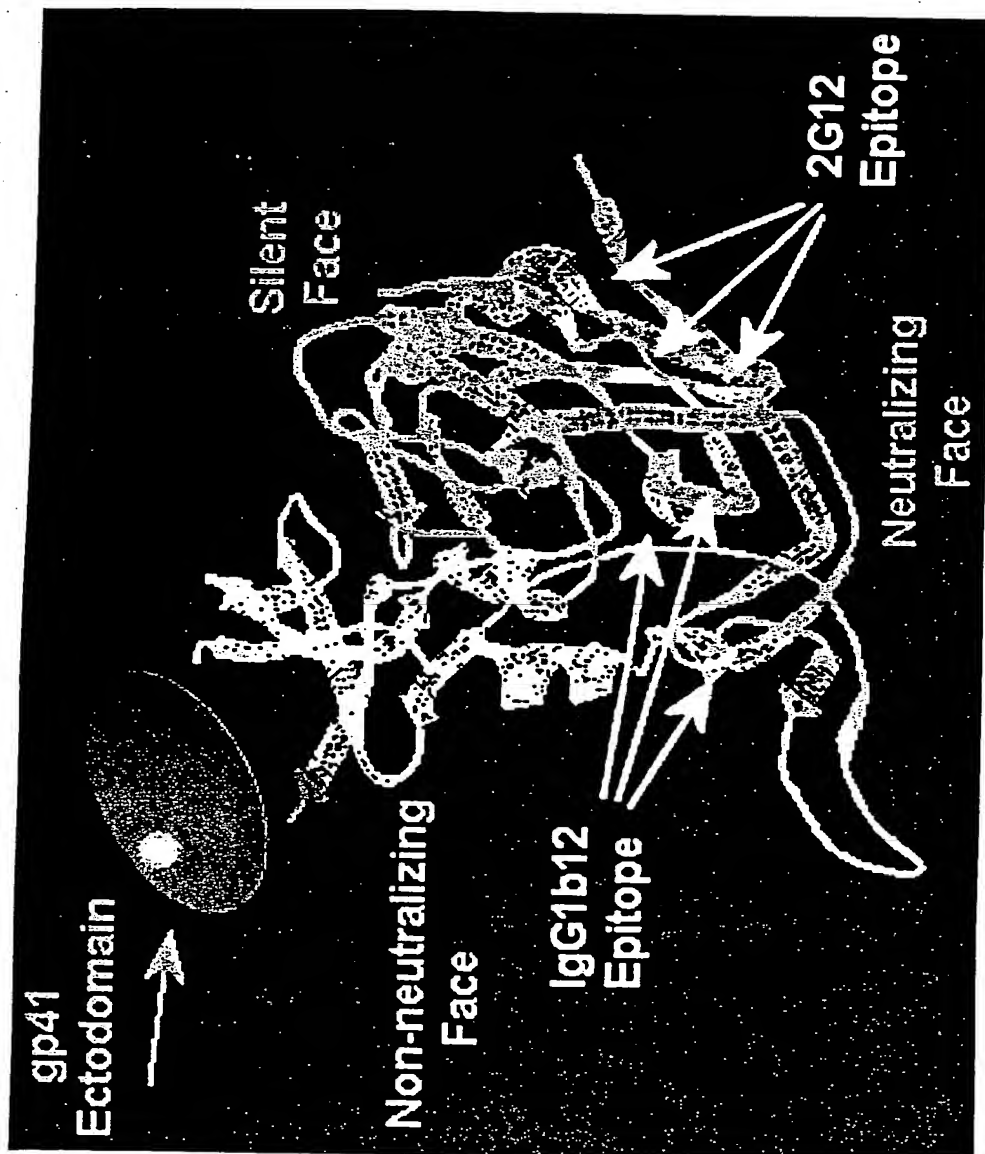
FIGURE 19F

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FIGURE 20A

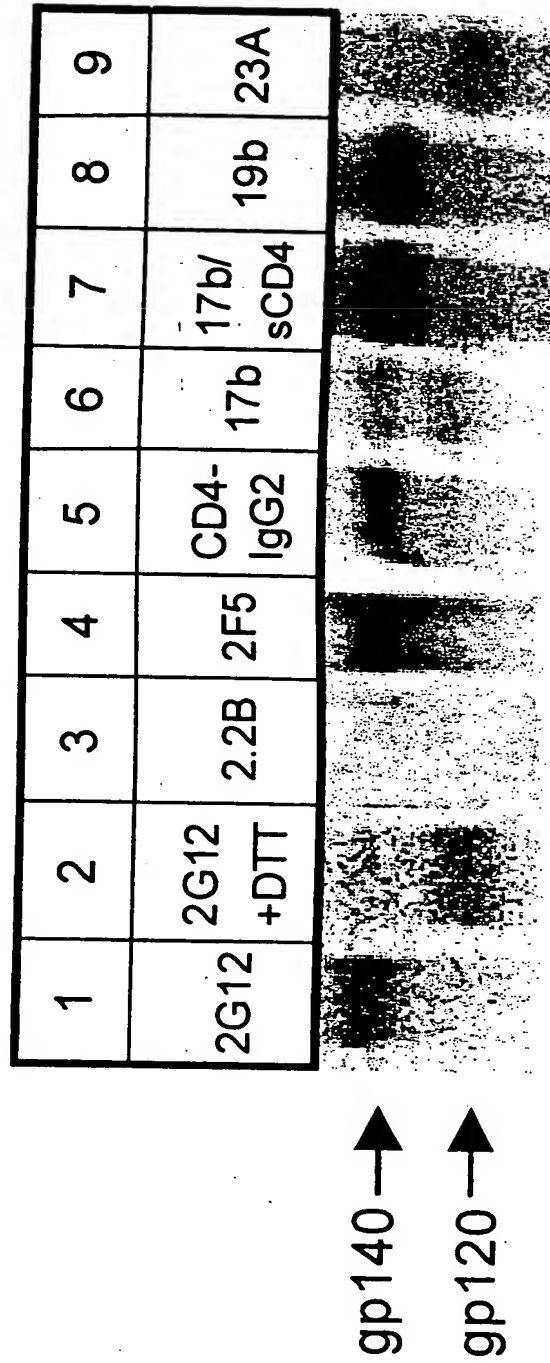
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FIGURE 20B



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FIGURE 21



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FIGURE 22B

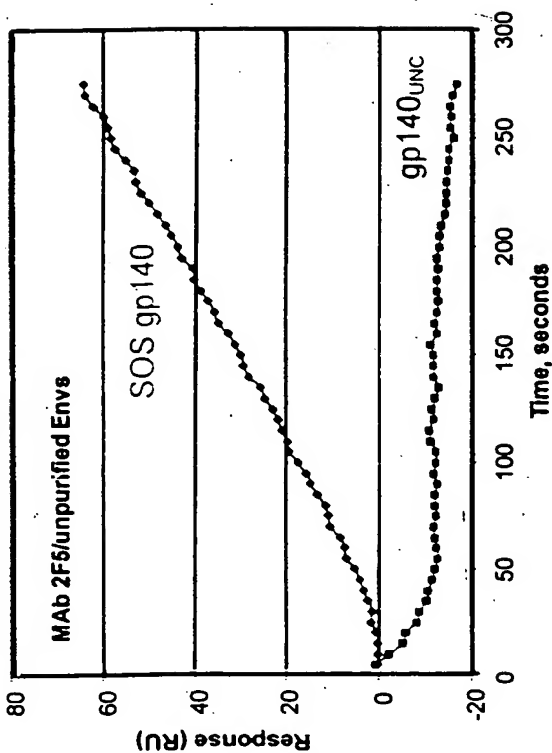


FIGURE 22D

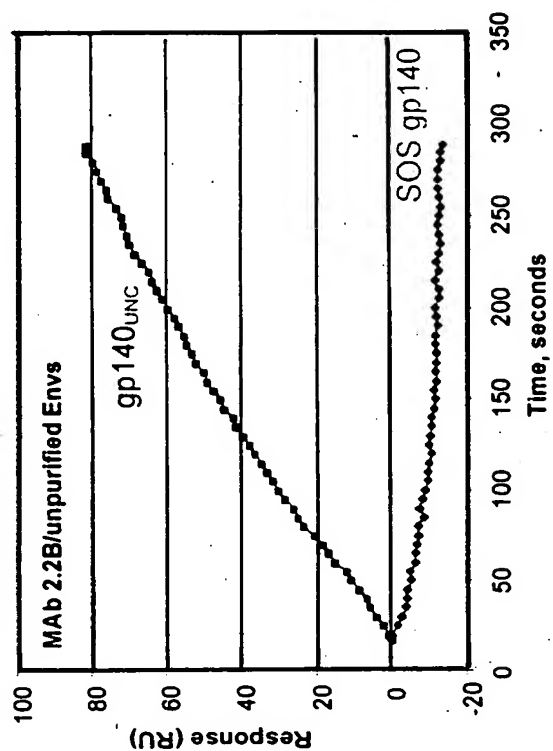


FIGURE 22A

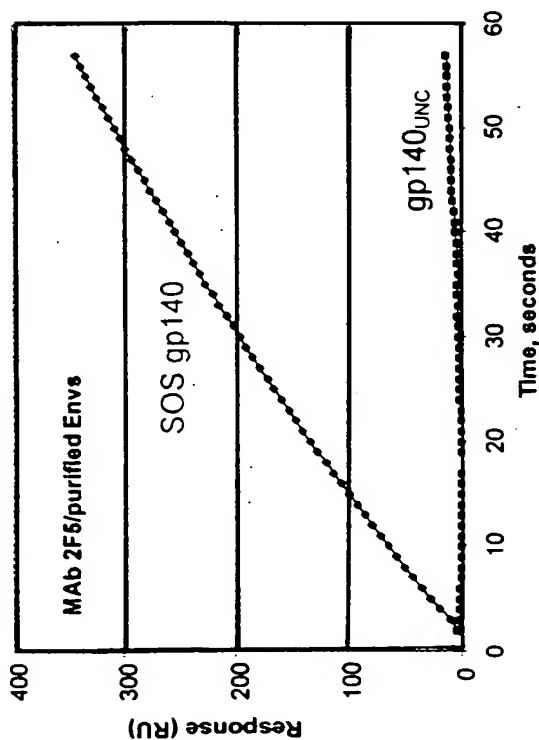
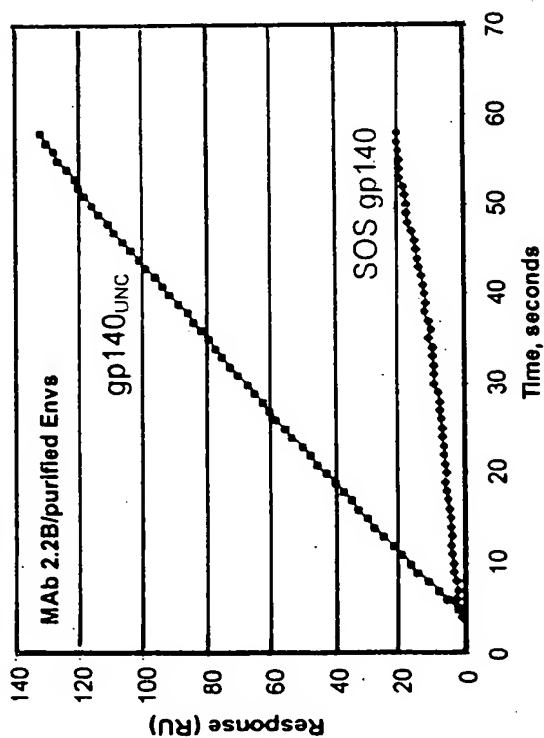


FIGURE 22C



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FIGURE 22F

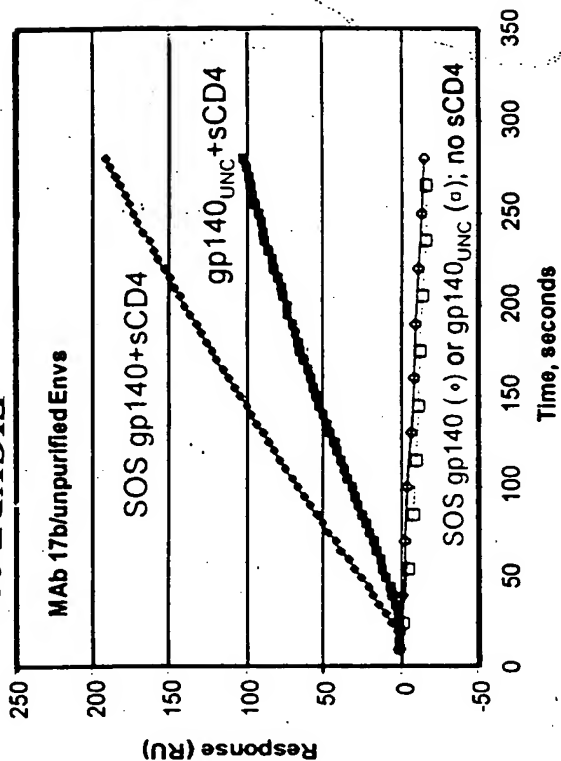


FIGURE 22H

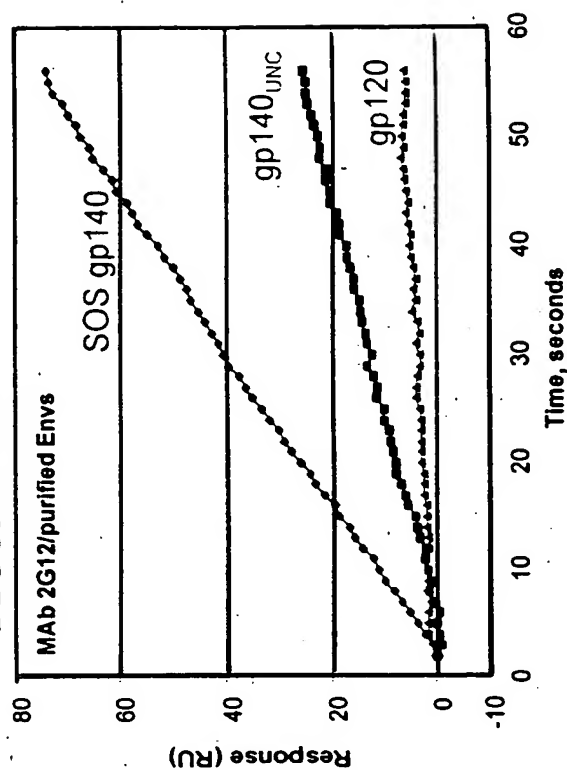


FIGURE 22E

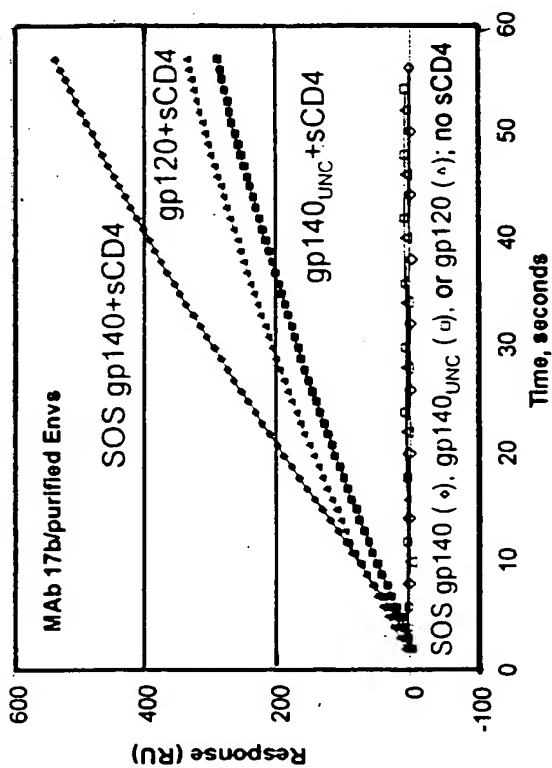
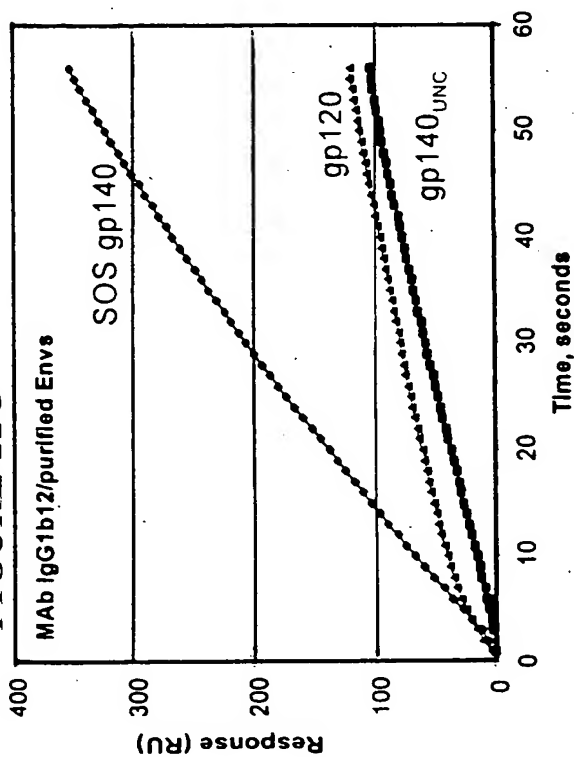
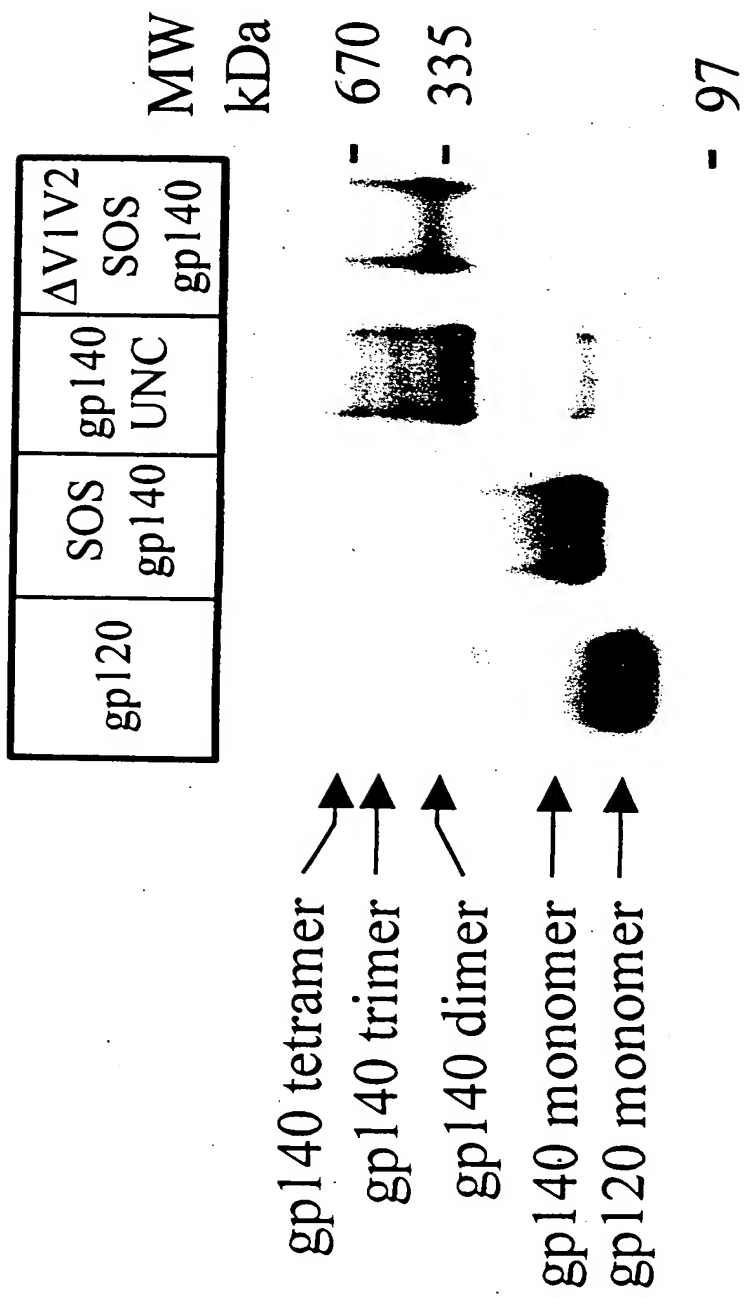


FIGURE 22G



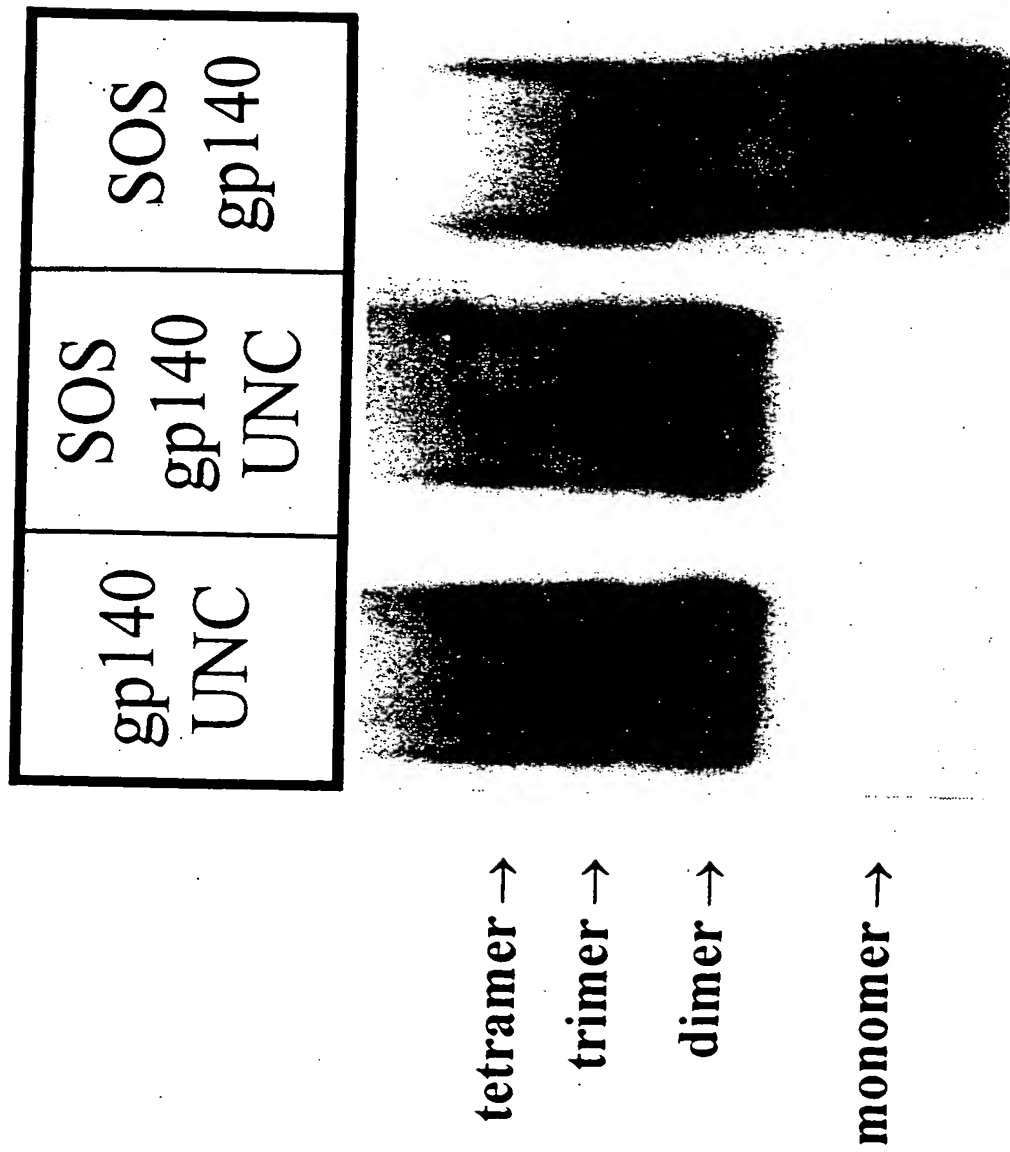
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FIGURE 23A

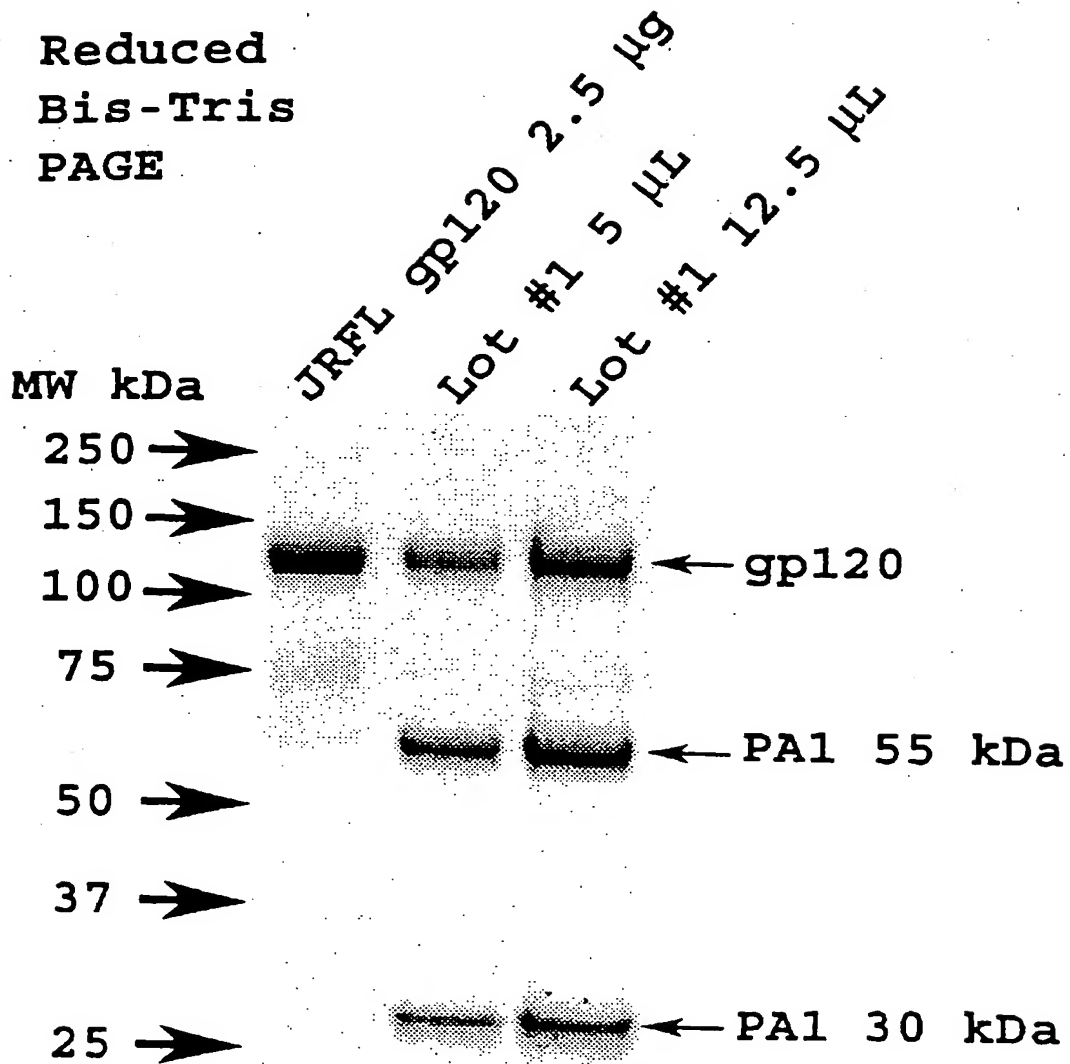


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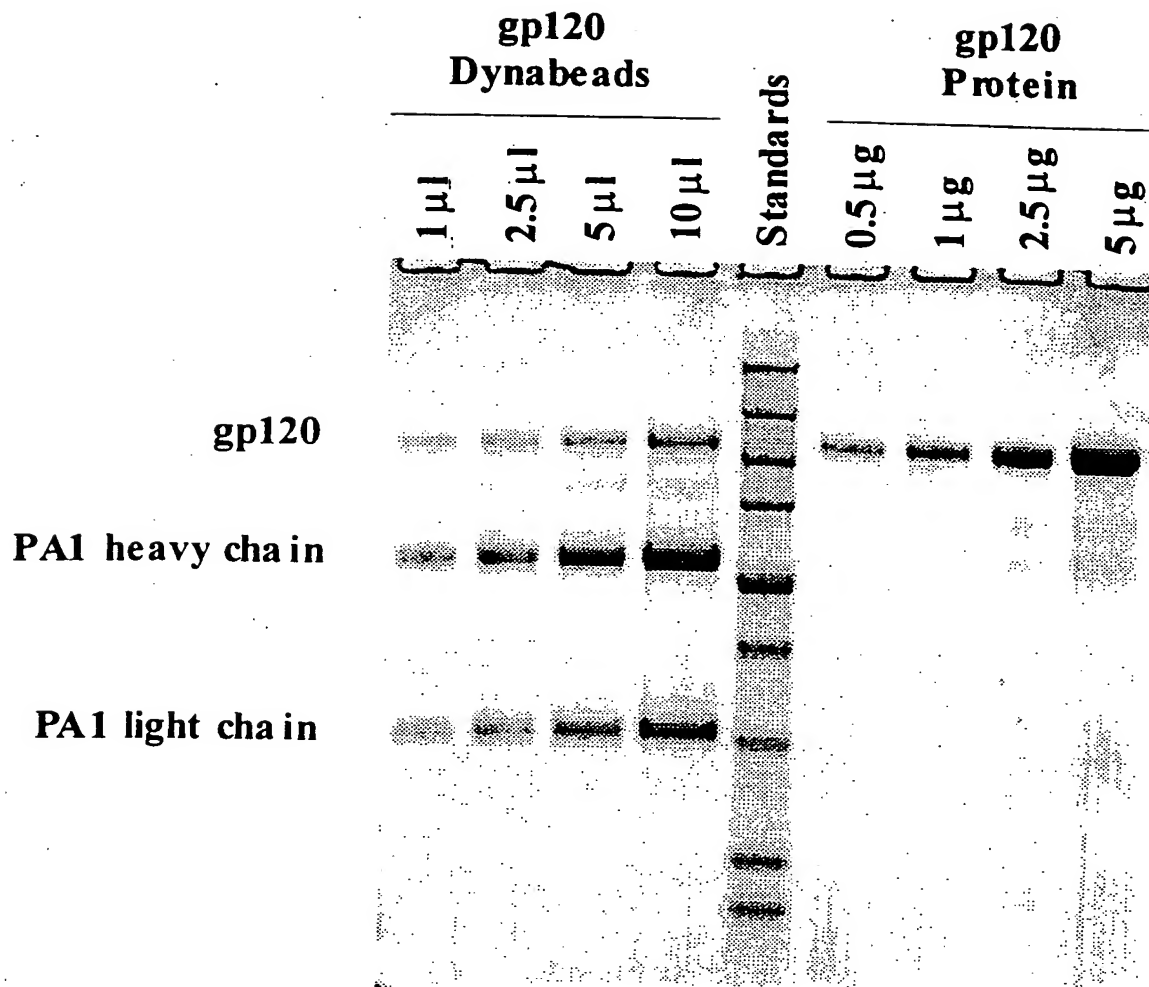
FIGURE 23B



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FIGURE 24

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FIGURE 25

Serum binding to native gp120 JRFL

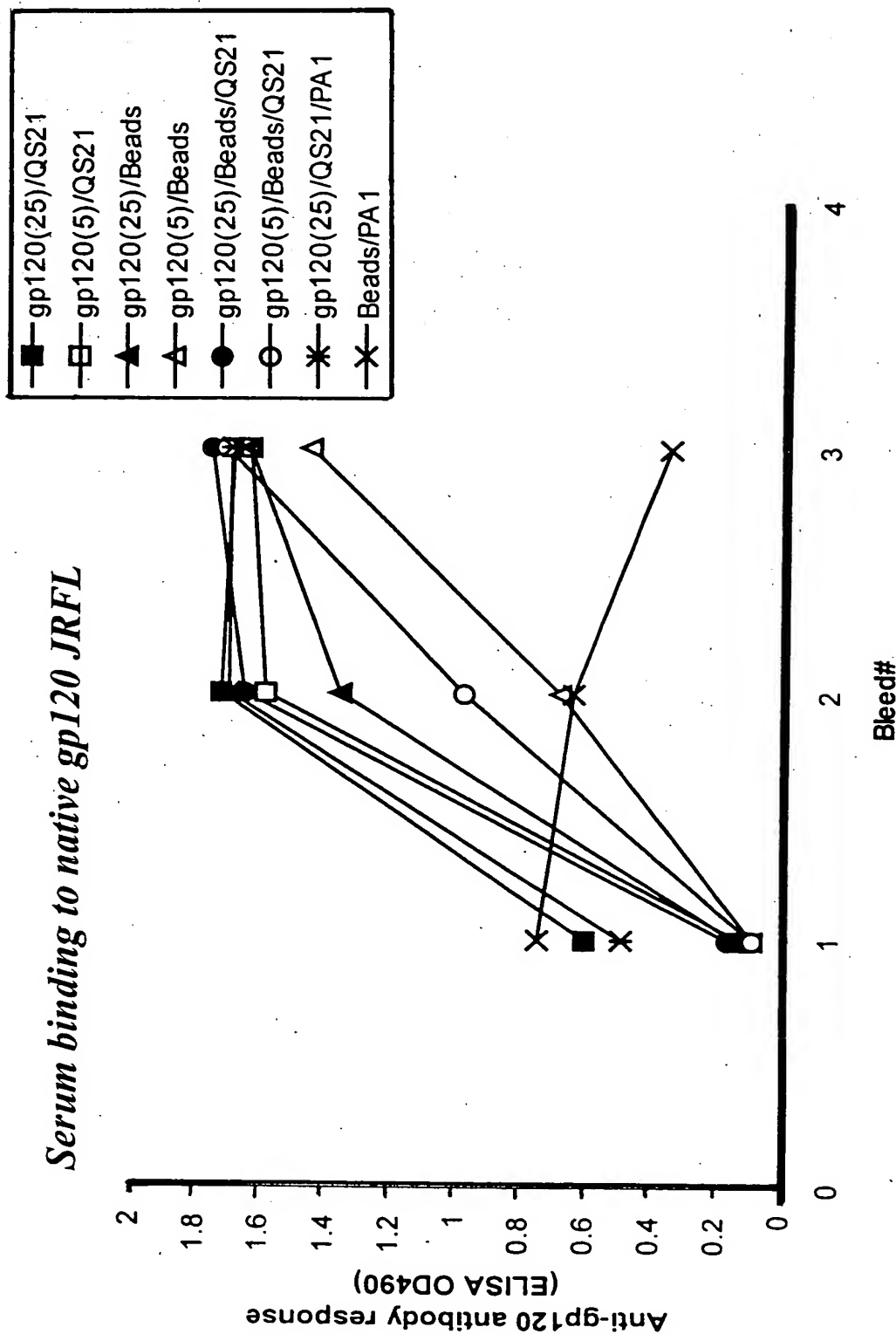


FIGURE 27

